

**Drive C USER'S MANUAL**  
**for Osborne Executive Computers**

PRELIMINARY

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This User's Manual and the software programs it describes are:

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The following trade names used in this manual are property  
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Drive C	Drive C:
TurboPac	Drive C:
QuickPac	Drive C:
BackPac	Drive C:
Trantor	Trantor Systems Limited
Osborne 1	Osborne Computer Corp.
Executive	Osborne Computer Corp.
WordStar	MicroPro International Corp.
SuperCalc	Sorcim, Inc.
dBASE	Ashton-Tate, Inc.
Personal Pearl	PearlSoft, Inc.

\*\*\*\* THANK YOU! \*\*\*\*

We thank you for buying your Drive C.

We've made every effort to make your Drive C simple to learn and easy to use.

This manual is designed to help you learn how to use the many features of Drive C as well as how to derive the maximum benefits from your Osborne Executive.

Most new computer owners have difficulty working with the apparent complexity of their computer. It's simple if you take it one step at a time.

The Drive C User's Manual provides step-by-step instructions for installing and using Drive C. Each step includes an actual practice exercise with your Drive C.

While it may appear that there are a lot of exercises, they take just a few minutes to do. Just follow the step-by-step instructions and you'll have your Drive C up and running very quickly.

You'll soon agree the easiest way to learn to use Drive C is simply by using it.

\*\*\*\* SPECIAL THANKS \*\*\*\*

This manual and the new Drive C software package were based largely on advice given us by Drive C owners. We're very proud of all our Drive C products and we hope you will continue to support us by giving us more advice and feedback on Drive C software and this manual. Thanks to all of you who helped.



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## 1. HOW TO USE THIS MANUAL (final draft)

### 1-1 WHAT'S INSIDE AND WHERE TO FIND IT

This manual is divided into several sections to make learning to use your Drive C efficient and easy.

Definitely read Section 1-2 next. There we explain all the symbols and abbreviations used throughout this manual.

Section 1-3 gives you an overview of all Drive C features.

Please read all of Section 2 regardless of your level of skill with your Osborne. If you follow our simple step-by-step installation procedure, you'll find installation straight forward and pleasantly painless. At the end of this section we have included a quick installation checklist for your reference.

In Section 3 we explain how to make Drive C fit the way you use your computer. This section was largely compiled from advice given us by Drive C users. You'll probably want to re-read this section after you've learned how to use Drive C to "lock in" what you've learned.

Each section is organized as a learn-as-you-go guide. Please don't try to start in the middle of a section unless you're completely confident you already understand all about Drive C.

In Section 4 we explain how to use each of the basic features of Drive C, the RAM-disk, the Print Buffer and its Utility program.

Section 5 goes into more depth with QuickPac and our Archive/Retrieve program for backing up and fast-loading of Drive C.

Section 6 contains several useful appendices. Everyone should read the first appendix on using COPY, COPYSYS and SETUP with Drive C. Some of the other appendices are more technical.

## 1. HOW TO USE THIS MANUAL (final draft)

### 1-2 SYMBOLS AND CONVENTIONS USED IN THIS MANUAL

Below are examples and explanations of the different symbols and conventions used in the manual. Please acquaint yourself with them since they are used throughout this manual.

When we refer to your unit we will use the term:        Drive C

When we mean a logical drive name we will use:        drive C:

#### THE RETURN KEY

<CR> or <RETURN> means: Press the RETURN key.

#### CONTROL C

^C means: Hold down the 'CTRL' key and press the 'C' key.

#### LOGICAL DRIVE INDICATOR

A> means: The drive prompt that appears on your screen. The letter indicates which logical drive is being used.

#### SINGLE LINE COMMANDS

A>ECL<CR>

Install Drive C as C:

YOUR INPUT is always shown in REGULAR print (usually upper case.)

The SCREEN DISPLAY for individual command lines is always shown in **BOLD** print.

In the above example, the A> is initially on the screen. You would then type ECL followed by pressing the RETURN key.

Your input is always shown literally.

If a space is shown in the command, it must be included when you type the command.

To the right of each input is a brief explanation of the command.

For example, the command ECL<CR> installs the Drive C unit as the third logical drive, drive C:.





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FULL SCREEN INPUTS

Is your unit 384K (Large), or 192K (Small) (L/S)? L

Which disks do you want copied to Drive C?

Disk A: or B: or both (A/B/2)? 2

Are the above choices correct (Y/N)? Y

When a series of inputs are required as part of a program, the entire sequence of inputs is shown.

YOUR INPUT is always shown in REGULAR print (usually upper case.)

The SCREEN DISPLAY for individual command lines is always shown in **BOLD** print.

## 1. HOW TO USE THIS MANUAL (final draft)

### 1-3 Drive C FEATURES

Drive C is an integrated hardware and software enhancement designed specifically for your Executive. Drive C not only dramatically improves performance and adds new capabilities...it actually improves the way you use your Executive.

#### RAM-disk

Your Executive has two floppy disk drives. The Drive C RAM-disk acts as a third logical drive, drive C:. It is called a logical drive because, to your Osborne, Drive C looks just like your floppy disk drives. Therefore, you can use Drive C EXACTLY as you use floppy drives A: and B:.

While floppy disk drives are slow, noisy and prone to mechanical failure, Drive C is fully electronic, silent and has no moving parts.

It can find information stored on it up to 20 times faster than a floppy disk drive. As a result, you will experience a dramatic improvement in program performance.

#### ILLUSTRATION - THIRD DRIVE (3")

This increase in disk speed dramatically affects the way many programs respond. WordStar frequently stops and starts as the floppy disk drives slowly access files. With Drive C, WordStar works smoothly without lengthy disk interruptions and a writer can, for the first time, write in a very natural way.

Drive C also adds additional on-line storage capacity. More programs and data can be stored on your Osborne. This feature eliminates constantly changing diskettes.

For example, you can easily have WordStar, SuperCalc, text and data files on Drive C and still have additional programs on your floppy diskettes. Large, complex programs like dBase II requiring many different files that work together, can now be resident on your Osborne at the same time.



## 1. HOW TO USE THIS MANUAL (final draft)

### ILLUSTRATION - MULTIPLE FILES (3")

The Drive C RAM-disk acts as one big logical disk drive. As a result, its full capacity can be used for one large file.

Programs, documents and databases can be built on the 384K Drive C that are twice as big as can be created on double-density floppy disks and four times the size of those on single-density disks.

### ILLUSTRATION - FILE LENGTH (3")

While Drive C acts like a floppy disk drive, it does not use actual diskettes. Files must be moved to and from Drive C using file copying programs like PIP, Sweep or WordStar. Once files are copied onto Drive C, they will remain there even if you press the Reset button.

The names of your floppy disk drives can be changed even though 'A' and 'B' are embossed on the Osborne front panel. Drive C software allows you to rename both Drive C and the floppy disk drives. The Drive C RAM-disk, for instance, is usually renamed to drive A: in order to run WordStar.

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The red drive indicator light on the front of Drive C works just like the red LEDs on your floppy disk drives to let you know when the Drive C unit is active.

ILLUSTRATION - COPY AND RENAME DRIVES (3")

### ARCHIVE AND RETRIEVE

When your Osborne is turned off, Drive C will no longer be powered and files in Drive C will be lost. Files on Drive C should be saved (backed up) on floppy disk before turning your Osborne off. You can use PIP or file copying options in programs like WordStar, or you can use our special Drive C program, ARCHIVE (ECA.COM).

ARCHIVE automatically stores any or all of the files from Drive C onto floppy diskettes. Files on Drive C that are larger than a single floppy diskette can be stored on a set of diskettes. ARCHIVE also labels and organizes each backup set.

RETRIEVE automatically reloads and reconstructs the original Drive C files from your Archival backup set of floppy disks.

BackPac, the Drive C power supply/battery backup system, fits in your keyboard and maintains the contents of Drive C even if your Osborne is turned off. Adding BackPac gives Drive C permanent storage capability, in essence letting Drive C act as an ultra-fast hard disk.

No electrical or mechanical modifications of your Osborne are necessary with BackPac.

## 1. HOW TO USE THIS MANUAL (final draft)

ILLUSTRATION - ARCHIVE, RETRIEVE AND BACKPAC (3.5")

### PRINT BUFFER

The Drive C Print Buffer lets you use your Osborne while simultaneously printing files. Once installed, Print Buffer operation is automatic.

The Print Buffer works with RS-232 Serial or Centronics Parallel printers.

Your printer normally ties up your Osborne until it has completed printing a file. The Print Buffer temporarily stores the print output from your Osborne at high speed and quickly returns control of your Executive to you. You continue to run programs while the Print Buffer automatically sends the print output to the printer.

ILLUSTRATION - PRINT BUFFER OPERATION (3")



## 1. HOW TO USE THIS MANUAL (final draft)

The Drive C unit is partitioned by its software into a RAM-disk space and a Print Buffer space. You can partition the Drive C for Print Buffer use in two different ways:

The FIXED BUFFER is a space on Drive C that is reserved solely for Print Buffer use. Eight Fixed Buffer sizes are available, from 16K to 128K.

The DYNAMIC BUFFER uses any space on the Drive C which is not being used as RAM-disk space. As you add or delete files from the RAM-disk, the Dynamic Buffer automatically decreases or increases in size. Up to the full capacity of the Drive C can be used as Print Buffer using the Dynamic Buffer option.

ILLUSTRATION - RAM-disk/PRINT BUFFER (6")

You can queue any number of files to be printed from both floppy disks and the RAM-disk. Files to be printed are stacked in the Print Buffer and will be printed in first-come, first-served order.

## 1. HOW TO USE THIS MANUAL (final draft)

The Drive C Utility program (ECU.COM) gives you a number of helpful features to use with the Print Buffer. With ECU you can pause, restart and clear the Print Buffer. You can also determine the amount of Print Buffer space available and delete files to make more space.

### QUICKPAC

QuickPac makes using Drive C even easier. A single keystroke starts QuickPac. QuickPac installs Drive C, renames Drive C and installs your choice of Print Buffers. It can also copy the contents of one or both of your floppy disks to Drive C and automatically run a program.

The QuickPac Installation program is an easy-to-use, menu-selection program that lets you choose from the various QuickPac options.

### TURBOPAC

TurboPac is the powerful Drive C/Trantor hard disk system. TurboPac software turns your Drive C into a hi-speed Cache Buffer for the Trantor hard disk.

TurboPac automatically keeps your most frequently used programs and data in the Drive C Cache Buffer, multiplying the hard disk throughput by as much as five times.

The 192K TurboPac system uses all of Drive C as a Cache Buffer. The 384K TurboPac system partitions Drive C into a 256K Cache Buffer and a 128K Fixed Print Buffer.

The hard disk attaches to the Drive C PRINTER/HARD DISK/8088 port and no mechanical modifications are necessary.

Drive C can still be used for portable operation by detaching the hard disk and using the normal Drive C RAM-disk/Print Buffer software.

ILLUSTRATION - TURBOPAC OPERATION (3.3")

## 2. GETTING STARTED (final draft)

### HIGHLIGHTS

- 2-1 Mechanical installation of Drive C
- 2-2 Removing the Drive C unit
- 2-3 Using display screens with Drive C
- 2-4 Making your copy of the Drive C software
- 2-5 Testing your Drive C installation
- 2-6 Trouble-shooting your Drive C installation
- 2-7 Testing Drive C with Centronics printers
- 2-8 Trouble-shooting Centronics printer cables
- 2-9 Copying your CP/M+ onto the EC USER Disk
- 2-10 Testing your printer operation
- 2-11 Trouble-shooting your printer, Part 2
- 2-12 Quick Checklist of Drive C installation

### 2-1 MECHANICAL INSTALLATION OF Drive C

**\*\* DO NOT INSTALL YOUR Drive C UNIT YET \*\***

Housed in a stainless steel case, Drive C is a rugged, solid state device which fits snugly into the floppy diskette storage pocket of the Executive.

Drive C has been designed specifically for your Executive. As a result, it generates very little heat and needs no maintenance. Installation does not require any electrical or mechanical modifications to your Osborne nor are any special tools required.

Two cables attach Drive C to the Osborne. One cable plugs into the Ext. Video edge connector. The other cable plugs into the IEEE-488 connector. You can think of these cables as "extension cords".

The Drive C edge connectors located at the end of the "extension cord" cables duplicate the functions of the Osborne Ext. Video and IEEE-488 connectors. You don't lose the use of your Osborne ports by adding Drive C.

For instance, if your parallel printer was normally connected to the Osborne IEEE-488 connector, you would instead connect it to the new edge connector at the end of the "extension cord" cable on the Drive C (labeled PRINTER/HARD DISK/8088). Since the Drive C edge connector is different from your computer's IEEE-488 connector, we provide you with a short Printer Adapter cable.



## 2. GETTING STARTED (final draft)

### Drive C UNIT INSTALLATION:

Be sure to turn the power to your Executive OFF before installing Drive C.

Slide the Drive C unit into the floppy disk storage pocket until the Drive C front panel is seated flush with the Executive front panel.

Connect the long 20-conductor VIDEO "Extension Cord" cable from the Drive C to the Executive EXT. VIDEO edge connector.

Please refer to the installation drawing on the next page.

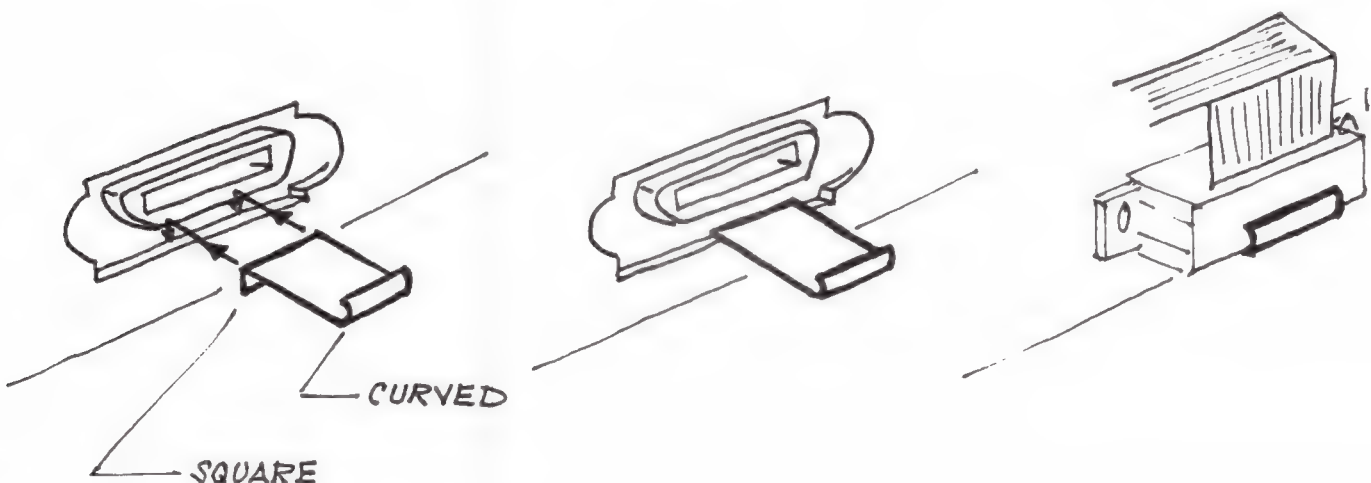
Attached to the rear of the 20-conductor cable are two lengths of double-sided tape. Remove the protective paper backing from these pieces of tape. When you have routed the cable neatly, press against the outside of the cable so the tape will hold the cable in place.

Insert the metal IEEE-488 connector clip (supplied with your Drive C in the small plastic bag) into the space just below your Executive's IEEE-488 connector. VERY GENTLY press upward on the black Executive IEEE-488 connector ONLY as far as necessary to insert the right angle bend of the metal clip. Please see the drawing below for details:

Plug the Drive C IEEE-488 extension cord cable into the Executive's IEEE-488 connector. This IEEE-488 cable goes over the 20-cond VIDEO extension cord cable.

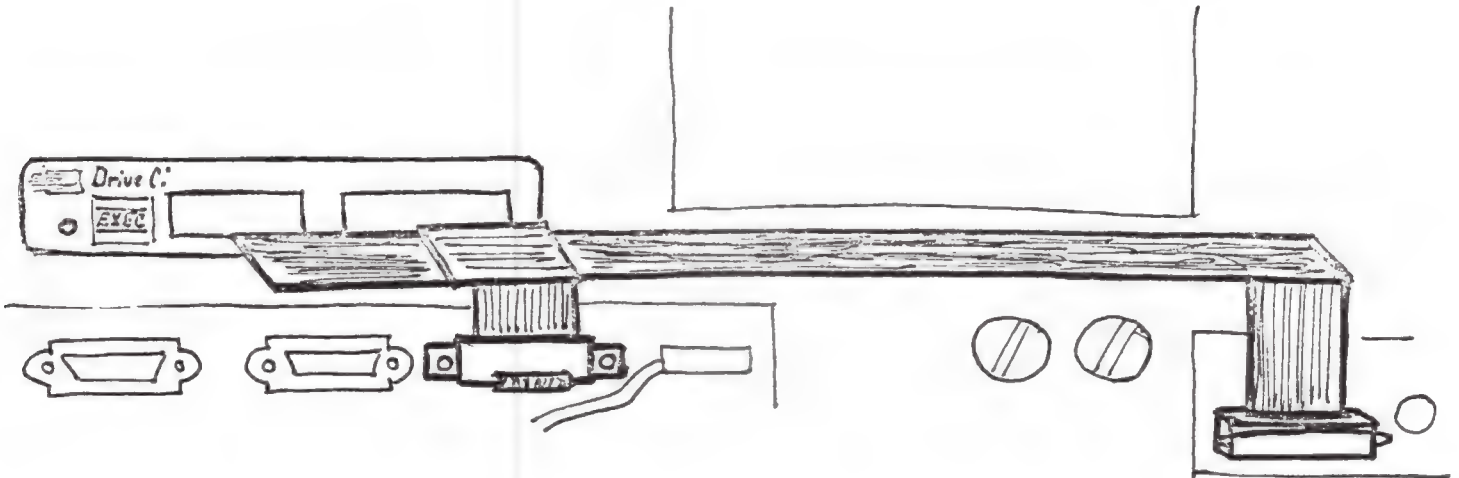
Sometimes the gray Drive C IEEE-488 plug will run into the Executive front panel as you are plugging it in. You may have the VERY GENTLY push downward on the gray Drive C IEEE-488 plug while you are pushing it inward in order to clear the Executive front panel.

### ILLUSTRATION - INSTALLING THE IEEE-488 CONNECTOR CLIP (3")



## 2. GETTING STARTED (final draft)

ILLUSTRATION - INSTALLATION OF EXEC DRIVE C UNIT & CABLES (4")



You may find that the Drive C cables might become jammed as you push the unit into the diskette storage pocket. This problem is reduced if you manually crease the folds at the Drive C end of the cables at the point where the cables bend around the wire strain reliefs.

ALSO, when you are inserting the Drive C unit into the pocket, gently push up on the bottom of the cables with your fingers to prevent them from jamming.

## 2. GETTING STARTED (final draft)

### 2-2 REMOVING THE Drive C UNIT

To remove your Drive C unit, please follow these steps:

FIRST, open both disk drive doors and TURN OFF POWER to your computer.

DETACH the short cable from the Osborne IEEE-488 edge connector by gently lowering the metal clip and pulling out the Drive C connector.

DETACH the long cable from the Osborne Ext. Video edge connector by pulling on the black plastic pull ring.

Gently pull the long cable away from the Executive front panel, pulling from right to left, as if you were removing a band-aid from your arm.

GENTLY, so you won't mar either Drive C or your Osborne, pry the front panel of the Drive C unit out from the floppy diskette storage pocket. Use a medium size, flat blade screwdriver as a lever until the Drive C unit is about 1/4 inch out of the pocket. Continue pulling out the Drive C unit by hand, grasping the front panel between the two "extension cord" cables.



## 2. GETTING STARTED (final draft)

### 2-3 USING DISPLAY SCREENS WITH Drive C

#### EXT. VIDEO/BATTERY PORT:

The Drive C EXT. VIDEO/BATTERY edge connector is an exact duplicate of the Osborne Ext. Video edge connector.

#### TO USE YOUR OSBORNE INTERNAL DISPLAY:

Your 7" internal display is enabled by attaching the black VIDEO SHORTING PLUG supplied with your Osborne. This plug has a label which says, "DO NOT REMOVE WHILE POWER IS ON".

When the Video Shorting Plug is plugged onto the Drive C EXT. VIDEO/BATTERY edge connector, video signals are directed to your internal display.

If you DO NOT PLUG the Video Shorting Plug into the Drive C EXT. VIDEO/BATTERY edge connector, your internal video display WILL NOT WORK!

With the Video Shorting Plug installed on your Drive C, your Osborne keyboard can be attached and the case closed without interference.

Please, DO NOT INSERT OR REMOVE the Video Shorting Plug with power ON.

#### USING AN EXTERNAL VIDEO DISPLAY WITH Drive C:

If you use an external video display monitor and DO NOT want your internal monitor on, DO NOT install the Video Shorting Plug on Drive C.

If you use an external display and want BOTH the external and internal displays on, DO install the Video Shorting Plug on Drive C.

## 2. GETTING STARTED (final draft)

## 2-4 MAKING YOUR COPY OF THE Drive C SOFTWARE

First we'll explain how to check your Drive C EXECUTIVE SOFTWARE DISK using DIR.COM to make sure it contains the correct files.

You will need your Executive CP/M+ System Disk #1 for the this section. Don't use the original disk supplied with your Executive, use your working copy.

DO NOT REMOVE THE WRITE PROTECT TAB FROM YOUR ORIGINAL Drive C EXECUTIVE SOFTWARE DISK! Do NOT try to load CP/M+ from this disk!

Step 1. Turn ON power to your computer.

Step 2. If either your internal or external display is not just right, please return to the previous section, 2-3, to make sure you have connected and adjusted your display(s) correctly.

Step 3. Insert your CP/M+ System Disk #1 in drive A: and the Drive C EXECUTIVE SOFTWARE DISK in drive B:.

Step 4. Press <CR> to load CP/M+. The A> should eventually appear on your screen.

**Step 5. Give the following command:**

A>DIR B:[FULL<CR>

DIRECTory of EXECUTIVE SOFTWARE DISK

## Scanning Directory...

### Sorting Directory...

Directory For Drive B: User 0

Name	Bytes	Recs	Attributes	Name	Bytes	Recs	Attributes
CPM3	SYS	18k	140 Sys RO	DIR	COM	15k	114 Dir RW
ECA	COM	10k	77 Dir RW	ECL	COM	6k	48 Dir RW
ECQ	COM	2k	11 Dir RW	ECQ	SUB	1k	1 Dir RW
ECQINS	COM	10k	80 Dir RW	ECU	COM	5k	40 Dir RW
ERASE	COM	4k	29 Dir RW	EXECST	COM	1k	1 Dir RW
PIP	COM	9k	68 Dir RW	PRN	TST	8k	62 Dir RW
RENAME	COM	3k	23 Dir RW	SHOW	COM	9k	66 Dir RW
SUBMIT	COM	6k	42 Dir RW	TYPE	COM	3k	24 Dir RW

```

Total Bytes      =   110k  Total Records =      826  Files Found =    16
Total 1k Blocks =    110  Used/Max Dir Entries For Drive B: 17/   64

```

NOTES: ECL.COM and ECQ.COM may vary in number of "Recs".

Step 6. If your EXECUTIVE SOFTWARE DISK is DIFFERENT from this display please write or call Drive C for assistance.

## 2. GETTING STARTED (final draft)

Next, we'll run through how to copy the Drive C EXECUTIVE SOFTWARE disk using COPY.COM.

You'll need your CP/M+ System Disk #1 again (in drive A:) and a blank diskette.

Step 7. Put your Drive C EXECUTIVE SOFTWARE DISK in drive B:

Step 8. Label your blank disk: EC USER DISK. ( EC = Executive Drive C )

Step 9. Type the Copy command as shown:

A>COPY<CR>

Step 10. Remove the CP/M+ SYSTEM Disk #1 from drive A:.

Step 11. Put your blank EC USER DISK in drive A:.

Step 12. Select the **COPY DISKETTES** function (the FIRST one listed).

Step 13. On the COPY DISKETTES Menu select the option (the SECOND one listed) which copies **FROM drive B: TO drive A:.**

Step 14. When the copy diskettes operation is completed, press <CR> to go back to the main COPY menu.

Step 15. Select the **Return to CP/M** menu option. You should then see the A> again.

Step 16. Remove the Drive C EXECUTIVE SOFTWARE disk from drive B:.

NOTE: if COPY gives an error message while copying, wait until the red drive indicator lights on the drives have gone out, then open both drive doors. Press the RESET button and go back to step 1 on the previous page. If you continue to get copy errors try repeating the procedure with a new blank diskette (you may have a bad diskette).

DO NOT WRITE PROTECT YOUR EC USER DISK OR IT WON'T WORK PROPERLY!

Step 17. Save your Drive C EXECUTIVE SOFTWARE DISK in a safe place for future reference.

## 2. GETTING STARTED (final draft)

### 2-5 TESTING YOUR Drive C INSTALLATION

**\*\* DO NOT INSTALL YOUR PARALLEL PRINTER CABLE YET \*\***

Just as you cannot use WordStar until you have loaded it into your Osborne, you cannot use Drive C until you have installed (loaded) the Drive C software.

With our set of programs called QuickPac installing Drive C as a RAM-disk is very simple and requires only a single key stroke.

Step 1. Put the EC USER DISK in drive A: and remove any other disk from drive B:.

Step 2. Press the RESET button.

Step 3. Press <CR> to load CP/M+ and QuickPac.

You will see the usual messages produced by CP/M+ as it loads and then a series of messages produced by QuickPac as it is operating.

QuickPac will then:

- \* install the Drive C RAM-disk software.
- \* rename the upper floppy drive to drive C: and the Drive C unit to drive A:.
- \* copy the contents of the EC USER DISK to the Drive C unit using PIP.
- \* run DIR [FULL] on the Drive C unit, now renamed to drive A:.

When the QuickPac operation is completed it will alert you with a beep and a message. The entire operation should take about one minute.

The Drive C RAM-disk should now be installed as a third logical drive, drive A:.  
You should see the following display:

IF YOU HAVE A 192K Drive C UNIT:

Scanning Directory...

Sorting Directory...

Directory For Drive A: User 0

Name	Bytes	Recs	Attributes	Name	Bytes	Recs	Attributes
DCLOADED	SYS	0k	0 Dir RW	DIR	COM	15k	114 Dir RW
ECA	COM	10k	77 Dir RW	ECN	COM	1k	5 Dir RW
ECQINS	COM	10K	80 Dir RW	ECU	COM	5k	40 Dir RW
ERASE	COM	4k	29 Dir RW	PIP	COM	9k	68 Dir RW
PRN	TST	8k	62 Dir RW	RENAME	COM	3k	23 Dir RW
SHOW	COM	10k	66 Dir RW	SUBMIT	COM	6k	42 Dir RW
TYPE	COM	3k	24 Dir RW				

Total Bytes	=	83k	Total Records =	630	Files Found =	13
Total 1k Blocks	=	83	Used/Max Dir Entries For Drive A:	17/		64



## 2. GETTING STARTED (final draft)

OR, IF YOU HAVE A 384K Drive C UNIT:

Scanning Directory...

Sorting Directory...

Directory For Drive A: User 0

Name	Bytes	Recs	Attributes	Name	Bytes	Recs	Attributes
DCLOADED	SYS	0k	0 Dir RW	DIR	COM	16k	114 Dir RW
ECA	COM	10k	77 Dir RW	ECN	COM	2k	5 Dir RW
ECQINS	COM	10k	80 Dir RW	ECU	COM	6k	40 Dir RW
ERASE	COM	4k	29 Dir RW	PIP	COM	10k	68 Dir RW
PRN	TST	8k	62 Dir RW	RENAME	COM	4k	23 Dir RW
SHOW	COM	10k	66 Dir RW	SUBMIT	COM	6k	42 Dir RW
TYPE	COM	4k	24 Dir RW				

Total Bytes = 90k    Total Records = 630    Files Found = 13  
Total 1k Blocks = 83    Used/Max Dir Entries For Drive A: 17/ 128

If your screen shows the correct information, your Drive C is now successfully installed. Please continue to Section 2-7 to install and test your printer.

If your screen does NOT show the CORRECT information, please continue to the next section, Trouble-shooting the RAM-disk Installation.

NOTE: The files ECN.COM may vary in size slightly on your unit from the number of "recs" shown above for either size unit.

## 2. GETTING STARTED (final draft)

### 2-6 TROUBLE-SHOOTING YOUR Drive C INSTALLATION

Before trouble-shooting the RAM-disk installation, REMOVE the EC USER DISK and any other disk from their floppy disk drives and turn the Osborne's power OFF.

1. Check that Drive C's VIDEO and IEEE-488 cables are securely connected to the Osborne connector contacts.
2. If the contacts on your Osborne VIDEO edge connector or IEEE-488 connector are not clean, there may not be a reliable electrical connection between Drive C and your Osborne.

Gently wipe the contacts clean, using a cotton swab slightly wetted with rubbing alcohol. If the contacts are really dirty you may use a fresh clean pencil eraser to remove any hard-to-remove tarnish or dirt.

3. YOUR CENTRONICS-STYLE PRINTER CABLE SHOULD NOT BE CONNECTED DURING INITIAL RAM-disk INSTALLATION AND TEST. Disconnect it if it was connected and run the installation tests again.

First: Wait until the red LED drive indicators go OFF (if they go off) and open BOTH disk drive doors.

Second: ALWAYS turn OFF the Executive power,

Third: Wait three seconds,

Fourth: Turn power back ON,

THEN: Press <CR> to re-start QuickPac.

4. Make sure that the test was run with the EC USER DISK.
5. Make sure your EC USER DISK is NOT write protected with a tab.
6. If you are re-running the EC USER DISK QuickPac test:

If re-running the test still doesn't work, you should start over by re-copying the Drive C EXECUTIVE SOFTWARE Disk onto your EC USER DISK and then re-running the test.

If you are still having problems, please contact the Drive C Service Department for assistance. We will need to know the following to help us to fix your problem:

- a. What is your Executive's Version Number, displayed in the box on the screen under the word EXECUTIVE just after RESET or turning on power. The number is either V1.2 or V1.21 .
- b. Are you using the CP/M+ BIOS version 1.0 or 1.1?
- c. What type of printer are you using?
- d. What is your Drive C serial number?
- e. What size is your Drive C (192K or 384K)?
- f. Where in the test procedure did any failure occur?
- g. What error messages (if any) were displayed?

## 2. GETTING STARTED (final draft)

### 2-7 TESTING Drive C WITH CENTRONICS PRINTERS

#### IF YOU HAVE A SERIAL PRINTER

Skip the sections on installing and trouble-shooting Centronics printers and proceed to section 2-9, Putting your CP/M+ on the EC USER DISK.

#### IF YOU HAVE A PRINTER WITH CENTRONICS PARALLEL INTERFACE

**\*\* DO NOT ATTACH YOUR PRINTER CABLE YET \*\***

Installing your parallel printer with Drive C requires no special software or hardware. Printers and printer cables, however, are very individualized products, often eccentric in their design and even cantankerous in their performance. This section will guide you through the installation of your printer with Drive C to make sure that it is working properly. The Print Buffer will NOT be installed yet.

Your parallel printer is normally attached to the IEEE-488 edge connector on your Osborne. The PRINTER/HARD DISK/8088 edge connector on the Drive C duplicates the parallel port function of the Osborne IEEE-488 port. To use your parallel printer with Drive C, your printer cable will be connected to the Drive C PRINTER/HARD DISK/8088 connector instead of the Osborne IEEE-488 connector.

We supply a Printer Adapter Cable with each Executive Drive C unit to convert from your 24-pin IEEE-488 cable to the 26-pin edge connector on the Drive C front panel.

Most Centronics parallel printers change the electrical conditions of the cable when they are turned OFF, causing problems for the Drive C.

Your Centronics-style printers should ALWAYS be ON for proper Drive C operation, if its cable is plugged into the Drive C. Neither your printer nor Drive C will be harmed by keeping your printer turned ON during Drive C use.

The printer cable should be attached to or removed from the PRINTER/HARD DISK/8088 port on the Drive C unit ONLY when your Executive computer's power is OFF.

## 2. GETTING STARTED (final draft)

### INSTALLING YOUR CENTRONICS PARALLEL PRINTER CABLE

Step 1. Remove the EC USER DISK and turn the Executive power OFF.

Step 2. Plug the IEEE-488 Printer Adapter Cable supplied with your Drive C into the Drive C unit's PRINTER/HARD DISK/8088 edge connector.

To install the Printer Adapter Cable, plug it into the PRINTER/HARD DISK/8088 edge connector on the Drive C front panel. Orient the cable's black edge connector so that the black cable comes out of the black connector body DOWNWARD.

You may also notice an arrow molded into the black plastic of the cable's edge connector. This arrow should be on the UPPER RIGHT of the connector when it is plugged in correctly.

Step 3. Plug your Centronics-style printer cable into the other end of the Adapter Cable.

Step 4. Optional: You may want to install 4-40 screws (1" long) and nuts to keep the Adapter Cable and your printer cable from coming apart.

Step 5. Turn ON the power to your Executive AND to your printer.

Step 6. Put the EC USER DISK back in drive A:.

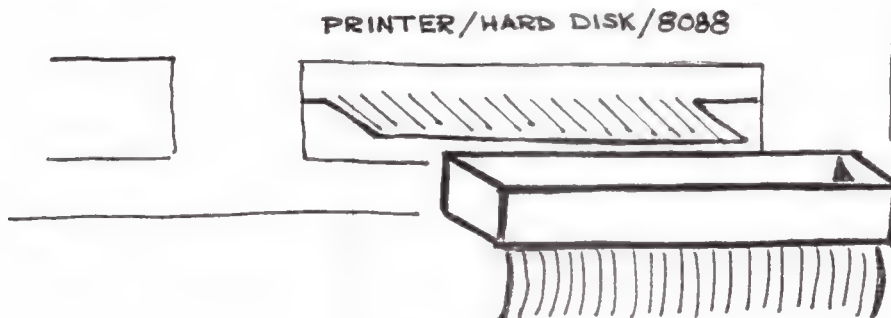
Step 7. Press <CR> to run QuickPac again.

You should see the same sequence of events as before (in section 2-5) when you loaded QuickPac without the printer.

If QuickPac proceeds exactly as before without any errors and the DIR [FULL] listing is exactly the same as before, then all is well. In this case, skip the next section and proceed to 2-9, Putting your CP/M+ on the EC USER DISK.

If the QuickPac test did not function exactly as before, or the QuickPac DIR [FULL] display gave information about the files on the Drive C unit DIFFERENT IN ANY WAY from before, please proceed to the next section, Trouble-shooting the Parallel Printer Installation.

ILLUSTRATION - ORIENTATION OF PRINTER ADAPTER CABLE (approx. 3")





## 2. GETTING STARTED (final draft)

### 2-8 TROUBLE-SHOOTING CENTRONICS PRINTER CABLES

1. If you tested your parallel printer installation with the printer OFF, please try it again with the printer power ON.
2. Make sure your Printer Adapter cable is firmly plugged into the Drive C PRINTER/HARD DISK/8088 port edge connector, AND that your printer cable is securely plugged into the Printer Adapter cable and into the printer.
3. Make sure your printer is ON-LINE (selected).
4. Drive C works correctly with all Osborne-standard Centronics parallel printer cables, but some cables do not conform to standard Osborne specifications. If you have such a cable, both your printer AND Drive C will not work correctly. Appendix 6-4 lists the proper cable connections.
5. An incorrectly wired cable is a VERY COMMON problem.

To check your parallel printer cable, first open BOTH disk drive doors and turn OFF power to your computer, then open the connector housing at the PRINTER END of the cable. The housing can usually be opened with a screwdriver or popped open with your fingernails.

There should NOT be a connection to pin 12 on the 36-pin connector at the printer end of the cable. If there is a wire attached to pin 12, it must be disconnected. Disconnecting this wire has no effect on your printer when used either with OR without Drive C.

DO NOT MAKE ANY MODIFICATIONS TO THE OSBORNE END OF YOUR PRINTER CABLE OR TO THE Drive C PRINTER ADAPTER CABLE.

ILLUSTRATION - FIXING THE PRINTER CABLE (3")

## 2. GETTING STARTED (final draft)

6. Replace the cable housing and plug the cable into your printer's Centronics parallel connector again.

7. NOTE: The Drive C EXECUTIVE SOFTWARE DISK (and the EC USER DISK) are set at the factory for Centronics printer assigned to the Printer (LST:) DEVICE and BOTH Modem and Printer RS-232 serial ports assigned to NO DEVICE.

If you have run COPYSYS or SETUP (you should NOT have run them at this point in the test procedure) you may have inadvertently changed the Printer Port assignments. If you have run either COPYSYS or SETUP, go back and re-copy the EXECUTIVE SOFTWARE DISK onto the EC USER DISK as detailed in section 2-4 and run these tests over again.

8. Turn the Osborne power back ON.

10. Put the EC USER DISK back in drive A: and press <CR> to re-run the QuickPac test.

If you are still experiencing difficulties, please contact the Drive C Service Department for assistance. We will need to know the following to help us to fix your problem:

- a. What is your Executive's Version Number, displayed in the box on the screen under the word EXECUTIVE just after RESET or turning on power. The number is either V1.2 or V1.21 .
- b. Are you using the CP/M+ BIOS version 1.0 or 1.1?
- c. What type of printer are you using?
- d. What is your Drive C serial number?
- e. What size is your Drive C (192K or 384K)?
- f. Where in the test procedure did any failure occur?
- g. What error messages (if any) were displayed?

## 2. GETTING STARTED (final draft)

### 2-9 COPYING YOUR CP/M+ ONTO THE EC USER DISK

Before trying the next test you will need to put your version of CP/M+ onto the EC USER DISK. For this operation you'll use the COPYSYS and SETUP utilities from your CP/M+ Systems Disk. If you have the new OCC version 1.1 BIOS make sure you don't mix up the old SETUP program with the new BIOS system file on your disk or vice versa.

Put your copy of the CP/M+ system disk in drive A: and the EC USER DISK in drive B:.

Press the RESET button and press <CR> to load CP/M+ and to get to the A>.

A>COPYSYS<CR>

Run COPYSYS from A:

Select the option to **Get System from Drive A:**, then select the option to **Save System to Drive B:**. When COPYSYS asks if you want to overwrite the existing CPM3.SYS file answer 'Y'. Last, select the option to **Return to CP/M.**

You now need to check the set up of your CP/M+ system so make sure the printer port is assigned correctly. Use this command.

A>SETUP<CR>

Run SETUP from A: to check B:

Select the option to **SELECT SOURCE FOR CONFIGURATION FROM DRIVE B:**. You may get an error message if you have mixed up the BIOS 1.1 version SETUP program with a BIOS 1.0 system disk or vice versa.

You should check to make sure your system is set up as follows:

A. KEY DEFINITIONS: have no effect on this test procedure, but don't use them during tests to simplify matters.

B. CONSOLE PARAMETERS: don't effect this test, use whatever you like.

C. MODEM PORT: MUST be set to NO DEVICE, not used for this test.

D. PRINTER PORT: If you are using an RS-232 printer set the correct Baud rate for your printer and make sure this port is set to Printer (LST:). Protocol should be set to whatever you normally use with your printer.

If you are using a Centronics parallel printer for this test, this port MUST be set to NO DEVICE.

E. PARALLEL PORT: Set to CENTRONICS if you are using a parallel printer for this test. Also make sure you have set this port to Printer (LST:).

If you are using an RS-232 Serial printer, this port MUST be set to NO DEVICE

F. GENERAL: (only appears with BIOS 1.1) Set to whatever you want.

If you have changed any Configuration parameters first **EXIT TO SAVE MENU** then select the **SELECT DESTINATION FOR CONFIGURATION TO DRIVE B:** option. If no changes are required then select the **EXIT TO CP/M** option from the SAVE menu.

## 2. GETTING STARTED (final draft)

### 2-10 TESTING YOUR PRINTER OPERATION

Now let's make sure your printer (whether Centronics parallel or RS-232 Serial) works properly with Drive C.

Make sure:

1. that your printer is ON
2. its cable is connected properly
3. the printer has at least five continuous pages of paper
4. it's ready to print (on-line)

Put your EC USER DISK into drive A: and remove any disk in drive B:.

Press the RESET button.

Press <CR> to load CP/M+ and QuickPac.

When QuickPac runs the DIR [FULL] command (as before in sections 2-5 and/or 2-7) and displays the CP/M+ A> prompt again, proceed as follows:

A>TYPE PRN.TST[NO PAGE<CR>      Display file PRN.TST on screen to see what it should look like.

A>PIP LST:=PRN.TST<CR>      Print PRN.TST via the LST: device using PIP.

Your printer should now be printing the Drive C Print Test as shown below.

Drive C: PRINTER TEST  
Drive C: PRINTER TEST a  
Drive C: PRINTER TEST ab  
Drive C: PRINTER TEST abc  
Drive C: PRINTER TEST abcd  
Drive C: PRINTER TEST abcde

The PRN.TST file contains approximately four pages of this test pattern. If you can print even a few lines your installation is working just fine and you can stop the test if you want to.

To STOP the print test: Type ^C to clear PIP back to the CP/M+ A>.

NOTE: we are not using the Drive C Print Buffer feature for this test, so you will not see the next A> prompt until the file is completely printed or until you stop the test with ^C. If your printer has an internal buffer or if you are using an external print buffer box, the printer may keep printing for a while after the computer has finished sending characters to the buffer.

If your system successfully passed all the tests so far, you're all done with installation! If you had problems printing PRN.TST go on to 2-11.



## 2. GETTING STARTED (final draft)

### 2-11 TROUBLE-SHOOTING YOUR PRINTER, PART 2

1. Please check that the EC USER DISK is properly configured for your printer (whether CENTRONICS or RS-232 Serial) using SETUP.COM.

Check your EC USER DISK's setup against the list at the end of section 2-9.

2. Check that your printer is on-line (selected).

3. If you are re-running the EC USER DISK printer operation test:

First: Wait until the red LED drive indicators go OFF (if they go off) and open BOTH disk drive doors.

Second: ALWAYS turn OFF the Executive power,

Third: Wait three seconds,

Fourth: Turn power back ON,

Fifth: Press <CR> to re-start QuickPac.

THEN: Re-type the PIP LST:=PRN.TST<CR> command to re-try the test.

4. If you are still experiencing difficulties, please contact the Drive C Service Department for assistance. We will need to know the following to help us to fix your problem:

- a. What is your Executive's Version Number, displayed in the box on the screen under the word EXECUTIVE just after RESET or turning on power. The number is either V1.2 or V1.21 .
- b. Are you using the CP/M+ BIOS version 1.0 or 1.1?
- c. What type of printer are you using?
- d. What is your Drive C serial number?
- e. What size is your Drive C (192K or 384K)?
- f. Where in the test procedure did any failure occur?
- g. What error messages (if any) were displayed?



## 2. GETTING STARTED (final draft)

### 2-12 QUICK CHECKLIST OF Drive C INSTALLATION

Please don't use this checklist in place of the step-by-step installation guide. This list was designed for your convenience to speed things up if you are already thoroughly familiar with your computer and CP/M.

The procedure of Section 2 was developed to GUARANTEE a satisfactory Drive C installation EVERY TIME. This checklist refers to specific detailed parts of Section 2 to make trouble-shooting easier.

- Step 1. Mechanically install your Drive C unit [Section 2-1]
- Step 2. Reconnect cables and Video Shorting Plug to your display [Section 2-3]
- Step 3. Check files on Drive C EXECUTIVE SOFTWARE Disk supplied with your unit. [Section 2-4]
- Step 4. Copy EXECUTIVE SOFTWARE Disk to EC USER Disk. [Section 2-4]
- Step 5. Run QuickPac, i.e. Drive C's EXECST.COM program which calls ECQ.COM, ECQ.SUB, PIP.COM and DIR.COM, to test Drive C installation. [Section 2-5]
- Step 6. If you have a Centronics parallel printer, turn OFF power to both computer and printer, reconnect your printer cable, and rerun QuickPac. [Section 2-7]
- Step 7. Put your version of CP/M+ onto EC USER Disk using COPYSYS [Section 2-9]
- Step 8. Check the setup of your EC USER DISK using SETUP.COM [Section 2-9]
- Step 11. Test your entire installation by printing PRN.TST from the Drive C unit using PIP.COM and your version of CP/M+. [Section 2-10]

The Trouble-shooting Sections (2-6, 2-8 and 2-11) were written to give you the ability to easily correct the most common installation problems.

If you run into trouble, make sure you go through the detailed installation procedure step-by-step. 99 times out of 100 you can fix just about any problem you might encounter very quickly without calling Drive C for help.

### 3. Fitting Drive C To Your Needs (final draft)

#### CONTENTS

- 3-1 The Automatic Approach
- 3-2 The Manual Approach
- 3-3 Using it both ways

Your Drive C software is very comprehensive. It has been designed for Osborne owners of all levels of experience, from the first time enthusiast to the professional programmer. If you are a beginner, you'll find it easy to understand and simple to use. If you're an old pro, you'll find it versatile and powerful.

Similarly, your Drive C can enhance any application. This section is a brief overview of how the different Drive C software features can be used. As you learn about your Drive C in the rest of the manual, you might keep in mind which features best fit your needs.

#### 3-1 THE AUTOMATIC APPROACH

QuickPac is the easiest way to use your Drive C. The QuickPac program can install ALL of the Drive C features, copy files from one or both of the floppy diskettes in your disk drives onto Drive C and run a program simply by pressing the <RETURN> key.

If you are a relatively new user we suggest you use QuickPac. The QuickPac Installation program is menu-driven and requires no technical knowledge. It lets you configure QuickPac to automatically install Drive C with the features you need each time you start your Osborne.

QuickPac has the unique feature of remembering if it has copied files onto your Drive C so that if you press the RESET button, QuickPac will re-install the Drive C features you've chosen (like a new drive name or the Print Buffer) without recopying files.

If you're a more experienced user who does the same procedures on a regular basis (like loading your accounting or data base program each day), you'll find it very convenient to setup and use QuickPac to automatically configure your system. The QuickPac Installation program creates a data file which QuickPac uses to find out which Drive C options you want to install (for instance, what program to run).

If you routinely use several programs, you can create a different QuickPac setup for each diskette set. As an example, one QuickPac setup might rename Drive C to drive A:, copy WordStar and your document files onto your Drive C unit and run WordStar automatically. A different QuickPac setup might copy your accounting data files onto Drive C and run your General Ledger program from your floppy disk.

Finally, if you're an experienced Osborne owner working with an inexperienced user (for instance, a new employee), you might want to setup QuickPac to automatically configure your system for frequently required jobs.

### 3. Fitting Drive C To Your Needs (final draft)

#### 3-2 THE MANUAL APPROACH

The Drive C commands have a very simple structure. ALL the Drive C features can be installed manually with a one-line statement (maximum length - 9 characters plus <RETURN>). If you do many different operations with your Osborne or if you are a programmer, you'll probably find it more convenient to use Drive C manually.

Because the Drive C commands are simple and short, you can put many alternate Drive C commands on your function keys. For instance, one function key might install Drive C as drive A: with the Dynamic Print Buffer. A second function key might install Drive C as drive C: with a 16K Fixed Print Buffer.

THE ECA program (ARCHIVE and RETRIEVE) can store and reconstruct the contents of Drive C, including files larger than the capacity of a floppy disk. ECA is also much faster than the standard QuickPac file copy function, which uses PIP.

Storing commonly used sets of files onto an Archive diskette set can be a very efficient way to use Drive C. The RETRIEVE portion of ECA can be used automatically so that a single function key will load an Archive set onto Drive C quickly. You could, for example, make one function key give the command: ECA R B<CR> which retrieves the contents of the Archive set in drive B: onto the Drive C unit.

### 3. Fitting Drive C To Your Needs (final draft)

#### 3-3 USING IT BOTH WAYS

Finally, the most powerful way to use your Drive C is with a combination of techniques. QuickPac can be started manually after booting up with CP/M+ by renaming the EXECST.COM file created by ECQINS to some other name.

By creating different QuickPac data files (ECQ.SUB) and different EXECST files (renamed to various different names) for different diskette sets, you can use QuickPac with your function keys to easily perform complex routines when you need them.

You will find this startup method most useful if you are developing programs and debugging them on the same machine. With either dBASE II or languages such as PASCAL or MBASIC, you will have to continuously go back and forth from editing/compiling to run-time environments. In the run-time environment you would set up QuickPac for fully automatic or semi-automatic (function keys or different EXECST file names) to simulate actual user conditions. When in development mode you would use QuickPac only on start up and, after un-planned RESET's (which happen all the time, don't they?) re-boot and load Drive C manually.

The remote RETRIEVE command, ECA R B, can be run automatically as part of QuickPac so that a single function key can start QuickPac and rapidly load new files onto Drive C using RETRIEVE and Archive sets.

QuickPac can also be custom configured much like a complex Submit file. Instructions for creating custom QuickPac setups are included in the appendices.

If you are an experienced user, the combination of function keys, QuickPac and ECA (ARCHIVE and RETRIEVE) will offer you almost unlimited flexibility for using Drive C with your Executive.



#### 4. Learning Drive C Skills (final draft)

##### CONTENTS

Sections 4-1 to 4-9: Using the RAM-disk  
Sections 4-10 to 4-14: Using the Print Buffer  
Sections 4-15 to 4-21: Using the Drive C Utility program

This section of the manual teaches you how to use the individual features of the RAM-disk and Print Buffer, as well as ECU, the Drive C Utility program.

Your Drive C has many powerful yet easy-to-use features. The exercises in this section will familiarize you with how each one works.

Each feature can be run using a simple command. Once you find which features best fit your needs, you can use them automatically.

The Drive C RAM-disk is installed on your Osborne as a third logical drive with a single command, ECL. Variations of the ECL command will install Drive C with a new drive name and also install the Print Buffer. ALL of the Drive C features can be installed with a one-line ECL command statement.

Your Drive C and floppy drives can be renamed at any time using the ECN command.

Eight different sizes of Fixed Print Buffer and a variable Dynamic Print Buffer can be installed with your RAM-disk. Once installed, the Print Buffer feature works automatically.

The ECU Utility program increases the flexibility of your Print Buffer.

ECU W, for example, is a feature which lets you pause Print Buffer output.

##### !!! IMPORTANT !!!

The software stored in the ROM chip and on the system disks of many Executive units contains a number of BUGS. One of the more obvious of these bugs affects Print Buffer operation. When you encounter this bug your entire computer will lock up and you will have to press the RESET button.

If the ROM version number of your computer (displayed in the rectangular box after just power on OR after pressing RESET) is 1.2, then you will have this problem.

ROM number 1.21 is the new, FIXED version, which works fine.

Osborne Computer Corp. has an upgrade available for both ROM and system BIOS software problems. You can obtain these upgrades for a reasonable charge from the Drive C: factory, from national FOG, or from OCC itself.

WE STRONGLY RECOMMEND YOU OBTAIN THESE SOFTWARE UPGRADES.



- 4-1 Getting ready
- 4-2 Installing the RAM-disk
- 4-3 Copying files onto the RAM-disk
- 4-4 Saving files from the RAM-disk to floppy
- 4-5 Installing the RAM-disk as drive A:
- 4-6 Installing the RAM-disk with different drive names
- 4-7 Drive C and the RESET button
- 4-8 Renaming the RAM-disk after installation
- 4-9 Running WordStar on Drive C - Doing it manually

Before starting the step-by-step instructions for using your Drive C, you will need another blank, pre-formatted diskette.

Open BOTH floppy disk drive doors on your Executive, turn power OFF to the computer, pause for about 3 seconds, then turn power back ON.

Step 2. Press <CR> to load CP/M+. The A> should appear on your screen.

Step 4. Select the COPYSYS menu option to **GET SYSTEM FROM DRIVE B:**.

Step 6. Then select the COPYSYS menu option to **SAVE SYSTEM ON DRIVE A:**.

Step 7. When the program is finished copying the CP/M+ system over to the EC DEMO disk, exit to the CP/M+ A>.

Step 8. **A>B:PIP A:=B:ECL.COM<CR>** Copy ECL.COM from B: to A:.

**Your EC DEMO DISK is now ready for use.**

#### 4. Using the RAM-disk (final draft)

##### 4-2 INSTALLING THE RAM-disk

CP/M+ must always be loaded before loading the Drive C software. The 'A' prompt indicates that CP/M+ has been successfully loaded onto your Executive.

You should already have the EC DEMO DISK (as detailed in Section 4-1) in drive A:, and your EC USER DISK in drive B:

Press <CR> to load CP/M+.

The Drive C Loader software (ECL.COM) must be loaded (installed) into your Osborne before you can use Drive C.

A>ECL<CR>		Install the Drive C RAM-disk as C:.
A>		The 'A' prompt

Drive C is now installed as the third logical drive on your Osborne, drive C:. It can be used exactly like your floppy disk drives, drive A: and drive B:.

Only one file is necessary to install Drive C, ECL.COM. ECL.COM can be on either floppy disk drive, but it's simplest to keep it on A:.

A>DIR C:<CR>		Run DIR of drive C:
ECN .COM		List of files on Drive C

The files ECN.COM and Drive C: .SYS on the Drive C unit are created automatically when the Drive C software is run. You can not see the Drive C: .SYS file on the DIRectory listing because it is in User Area 15. Do NOT attempt to erase the Drive C: .SYS file since it is used for the Print Buffer and to keep other files intact on Drive C after a RESET.

Drive C, unlike a floppy disk, does not need to be formatted to be used. Nor does CP/M+ need to be placed on Drive C by COPYSYS. Once installed, Drive C "looks like" a formatted diskette ready to accept files.

A>C:<CR>		Log onto C:, the Drive C unit
C>DIR<CR>		Run DIR of drive C: from C:
ECN .COM		Display of DIRectory listing

The CP/M+ built-in commands, like DIR, are available on the Drive C RAM-disk. But in order to run the extended functions of these commands, DIR [FULL], for example, you must have the complete program file on the logged-in drive. In this case, since you are logged-in on drive C:, to use the extended DIR command you have to have DIR.COM on drive C:.

#### 4. Using the RAM-disk (final draft)

##### 4-3 COPYING FILES ONTO THE RAM-disk

To use the Drive C RAM-disk, files must be copied onto it from the floppy disks.

The simplest way to copy files onto the Drive C RAM-disk is with a copy program like PIP. Other programs like NSWEEP or WASH can also be used.

C>B:PIP<CR>	Run PIP from B:
*C:=B:ECU.COM[V<CR>	Copy ECU.COM onto C: from B:
*C:=B:PIP.COM[V<CR>	Copy PIP.COM onto C: from B:
*C:=B:DIR.COM[V<CR>	Copy DIR.COM onto C: from B:
*C:=B:ERASE.COM[V<CR>	Copy ERASE.COM onto C: from B:
*C:=B:SHOW.COM[V<CR>	Copy SHOW.COM onto C: from B:
*^C	Press control C to exit PIP
C>DIR[FULL<CR>	Run DIR of C: (Drive C unit)

Scanning Directory...

Sorting Directory...

Directory For Drive C: User 0

Name	Bytes	Recs	Attributes	Name	Bytes	Recs	Attributes
DIR	COM	16k	114 Dir RW	ECU	COM	2k	5 Dir RW
ECU	COM	6k	40 Dir RW	ERASE	COM	4k	29 Dir RW
PIP	COM	10k	68 Dir RW	SHOW	COM	10k	66 Dir RW
Total Bytes	=	48k	Total Records =	322 Files Found =	6		
Total 1k Blocks	=	43	Used/Max Dir Entries For Drive A:	10/	128		

This DIR [FULL] listing assumes you have a large (384K) Drive C unit. If you have a small unit (192K) the same files will be shown but with slightly different numbers for file size, i.e. "Recs", and "Total Bytes".

Once you have copied files onto the Drive C RAM-disk, you can use these files just as you would on your floppy disks.

NOTE: We strongly recommend the use of the Verify [V] option with PIP when copying FROM floppy TO Drive C, to enhance CP/M's ability to detect errors. When copying TO floppy FROM Drive C (or FROM floppy TO floppy) the Verify option is not effective and wastes time, so don't bother with it then.

#### 4. Using the RAM-disk (final draft)

##### 4-4 SAVING FILES FROM THE RAM-disk TO FLOPPY

When your Osborne is turned OFF, the contents of the Drive C RAM-disk will not be retained, unless you have Drive C's BackPac battery backup power supply.

Files on Drive C which you want to save (backup) must be stored onto floppy disks.

Again, the simplest way to copy files from the Drive C RAM-disk onto your floppy disks is with a copy program like PIP or NSWEEP.

C>PIP<CR>	Run PIP from drive C: (Drive C unit)
*A:=ECU.COM<CR>	Copy ECU.COM to floppy A: (EC DEMO DISK)
*A:=PIP.COM<CR>	Copy PIP.COM to floppy A: from C:
*A:=DIR.COM<CR>	Copy DIR.COM to floppy A: from C:
*A:=SHOW.COM<CR>	Copy SHOW.COM to floppy A: from C:
*A:=ERASE.COM<CR>	Copy ERASE.COM to floppy A: from C:
*^C	Press ^C to exit PIP
C>DIR A:[FULL<CR>	Run DIR of EC DEMO DISK from C:

Directory For Drive A: User 0

Name	Bytes	Recs	Attributes	Name	Bytes	Recs	Attributes
CPM3	SYS	18k	140 Sys RO	DIR	COM	15k	114 Dir RW
ECL	COM	6k	47 Dir RW	ECU	COM	5k	40 Dir RW
ERASE	COM	4k	29 Dir RW	PIP	COM	9k	68 Dir RW
SHOW	COM	9k	66 Dir RW				
Total Bytes	=	66k	Total Records =	504	Files Found =	7	
Total 1k Blocks	=	66	Used/Max Dir Entries For Drive A:	8/	64		

The files ECU.COM, ERASE.COM, PIP.COM, SHOW.COM and DIR.COM were first copied onto the Drive C RAM-disk, drive C:, from the floppy disk, drive B:, using the PIP command from drive B:.

The same files were then saved onto the floppy disk, drive A:, by using the PIP command from drive C:.

#### 4. Using the RAM-disk (final draft)

##### 5.1 - ILLUSTRATION - BLOCK OF PIP TRANSACTIONS (3").



#### 4. Using the RAM-disk (final draft)

##### 4-5 INSTALLING THE RAM-disk AS DRIVE A:

The Drive C unit is installed as logical drive A: by adding the drive letter A to the ECL command. To re-install Drive C, first RESET your Osborne. Drive C is no longer installed after pressing the RESET button but its files remain.

Press <CR> to load CP/M+. The A> should appear on your screen.

A>ECL A<CR>	Install Drive C as A:
C>A:<CR>	Log onto drive A:
A>DIR[FULL<CR>	DIRectory of A: (the Drive C unit)

Directory For Drive A: User 0

Name	Bytes	Recs	Attributes	Name	Bytes	Recs	Attributes
DIR	COM	16k	114 Dir RW	ECN	COM	2k	5 Dir RW
ECU	COM	6k	40 Dir RW	ERASE	COM	4k	29 Dir RW
PIP	COM	10k	68 Dir RW	SHOW	COM	10k	66 Dir RW
Total Bytes = 48k				Total Records = 322 Files Found = 6			
Total 1k Blocks = 43				Used/Max Dir Entries For Drive A: 10/ 128			

Again, this display assumes a 384K Drive C unit. Some numbers may vary in the DIR[FULL listing for a 192K Drive C.

Notice that the same files are still on the Drive C unit (now renamed to drive A:) exactly as they were before you pressed the RESET button.

#### 4. Using the RAM-disk (final draft)

##### 4-6 INSTALLING THE RAM-disk WITH DIFFERENT DRIVE NAMES

The command ECL A is an example of a general rule:

THE LETTER AFTER THE ECL COMMAND WILL BE THE LOGICAL DRIVE NAME OF THE DRIVE C: UNIT. THERE MUST BE A SPACE BETWEEN ECL AND THE DRIVE LETTER.

ECL A will install the Drive C unit as drive A:.  
ECL B will install the Drive C unit as drive B:.  
ECL or ECL C will install the Drive C unit as drive C:.

After installing the Drive C unit as A:, the upper floppy is renamed C: and the A> appears on the screen.

Another general rule is:

IF THE DRIVE C: UNIT IS INSTALLED AS A: OR B:, THE FLOPPY DISK DRIVE THAT WAS ORIGINALLY A: OR B: WILL BE RENAMED C:.

If the Drive C unit is named A:, the original A: drive will be renamed C:.  
If the Drive C unit is named B:, the original B: drive will be renamed C:.

If you were logged-in on floppy drive A: when you gave an ECL A command, the logged-in drive would still be the same floppy disk drive, but it would be named drive C:. You will get a C> prompt.

The logged-in drive remains the same actual drive as before running ECL.COM.  
If the drives are renamed, the logged-in drive has the NEW drive name.

#### 4. Using the RAM-disk (final draft)

##### 4-7 Drive C AND THE RESET BUTTON

In the previous exercise the RESET button was pressed and Drive C was re-installed as A:. The files on the Drive C unit are still present after a RESET.

Drive C:.SYS, a zero K (OK), R/O (READ ONLY) file stored in User Area 15 keeps the files on the Drive C: unit when the RESET button is pressed.

In order to access the files on the Drive C: unit after pressing the RESET button, you need only to reinstall Drive C using the ECL command.

Re-installing the Drive C unit with a new drive name does not affect files already on Drive C.

##### 5.2 - ILLUSTRATION - BLOCK SHOWING RESET OPERATION AND Drive C:.SYS (4")

#### 4. Using the RAM-disk (final draft)

##### 4-8 RENAMING THE RAM-disk AFTER INSTALLATION

The Drive C RAM-disk and the floppy disk drives can be renamed at any time using the EC NAME (ECN.COM) program.

ECN.COM, like the Drive C:.SYS file, is created and placed on the actual Drive C unit regardless of the Drive C unit's logical drive name.

A>ECN C<CR>

Rename the Drive C unit,  
drive A:, to C:

C>

The 'C' prompt

The Drive C unit, drive A:, is now renamed drive C:.

Since you did not move to a different drive, ECN returned you to the drive you WERE ORIGINALLY logged onto, the Drive C unit, but with the NEW name, drive C:.

The C> prompt therefore appeared after changing the drive names.

THE LETTER AFTER THE ECN COMMAND WILL BE THE LOGICAL DRIVE NAME OF THE Drive C UNIT.

ECN A will rename the Drive C unit as drive A:.

ECN B will rename the Drive C unit as drive B:.

ECN C will rename the Drive C unit as drive C:.

ECN remains logged-in to the same ACTUAL drive, but with  
the NEW drive name.

#### 4. Using the RAM-disk (final draft)

##### 4-9 RUNNING WORDSTAR ON Drive C - DOING IT MANUALLY

You now have all the tools necessary to run WordStar on the Drive C unit, now renamed back to drive C:. (See Section 4-8)

In this exercise you will copy and run WordStar manually.

Put your Executive WordStar disk in drive B:. Your EC DEMO disk should still be in drive A: and you should still be logged onto drive C:.

C>ECN A<CR>	Rename the Drive C unit to A:
A>PIP A:=B:WS*.*[V<CR>	Copy the WordStar files onto A:, (the Drive C unit) from B:

PIP has copied the three WordStar files from the floppy diskette in drive B: onto drive A:, the Drive C unit.

A>DIR[FULL<CR>	DIRectory off A: (Drive C unit)
----------------	---------------------------------

Directory For Drive A: User 0

Name	Bytes	Recs	Attributes	Name	Bytes	Recs	Attributes
DIR	COM	16k	114 Dir RW	ECN	COM	2k	5 Dir RW
ECU	COM	6k	40 Dir RW	ERASE	COM	4k	29 Dir RW
PIP	COM	10k	68 Dir RW	SHOW	COM	10k	66 Dir RW
WS	COM	18k	138 Dir RW	WSMSGs	OVR	30k	235 Dir RW
WSOVLY1	OVR	34k	262 Dir RW				

Total Bytes	=	130k	Total Records =	957	Files Found =	9
Total 1k Blocks	=	124	Used/Max Dir Entries For Drive A:	14/	128	

Again, this display is for a 384K Drive C unit. Some file sizes displayed may be different with a 192K Drive C.

A>WS<CR>	Run WordStar from A:
----------	----------------------

WordStar will now load and run. It's ready for use on the Drive C unit.

Press 'X' to EXIT WordStar.

A>ECU E<CR>	Run ECU E (Erase) from A:
-------------	---------------------------

Erase all (including R/O) Drive C: files (Y/N)? Y  
Are you absolutely certain (Y/N)? Y  
All Drive C files have been DELETED.

The files on Drive C (with the exception of Drive C:.SYS) have been erased for the next exercise. If you wish you may type the DIR command to check. [We'll explain the use of ECU E in more detail in section 4-20]



## 4. Using the Print Buffer (final draft)

### CONTENTS

- 4-10 Print Buffer Operation
- 4-11 Installing the Print Buffer
- 4-12 The Fixed Print Buffer
- 4-13 The Dynamic Print Buffer
- 4-14 Using the Dynamic Print Buffer

### 4-10 PRINT BUFFER OPERATION

IMPORTANT, please read the notice on page 31 about Executive ROM bugs before beginning this section.

The Print Buffer feature of Drive C lets you compute and print at the same time.

When you print a file, you can not run a program because your printer has control of your Osborne until the printing operation is completed. Printers are slower than the computer so your Executive can be tied up for considerable lengths of time.

The Print Buffer LOOKS like your printer to your Osborne. The print output is sent to the Print Buffer just as it would be sent to your printer. But the Print Buffer temporarily stores the print output at high speed while simultaneously sending it to the printer at the printer's slow speed.

Your Osborne THINKS it has finished printing a file when all of the print output has been transferred to the Print Buffer. The CP/M+ prompt or your program is available while the Print Buffer continues to print the file.

After the contents of the Print Buffer has been printed, the Print Buffer is automatically cleared and the space is again available for more print output from your Osborne.

When the Print Buffer is installed, your Drive C is partitioned into two parts, the RAM-disk and the Print Buffer.

The Fixed Print Buffer is a space solely dedicated to print buffer operation. Eight different Fixed Buffer sizes are available:

16K, 32K, 48K, 64K, 80K, 96K, 112K, 128K

The RAM-disk will be decreased in size by the amount of space you choose to allocate to the Fixed Buffer.

The Dynamic Print Buffer (the P option) does NOT allocate a specific amount of space for print buffer operation. Instead, any space not used by the RAM-disk for files can be used for the Print Buffer.

The Print Buffer is normally installed at the same time that you install the RAM-disk. You can also install (or de-install) the Dynamic Print Buffer at any time after loading Drive C using the ECU I command. ECU I will switch the Print Buffer back and forth from Installed to De-Installed each time you run the command.

#### 4. Using the Print Buffer (final draft)

Once installed, print buffer operation is transparent. This means you can send your print output to your printer using your regular printing method and the Print Buffer will be automatically engaged. No special printing commands are necessary.

If the amount of information to be printed is larger than the space available in the Print Buffer, the computer will slow down its output to match the printer's speed. The program generating the print output will slow down also.

If enough extra space becomes available for the Print Buffer to contain ALL the print output at once (if, for example, you have deleted a file using ECU to make more space) then the program generating the print output will be able to complete its print operation. The Print Buffer will continue to send characters to the printer until the printer has printed them all.

#### 5.4 - ILLUSTRATION - Filling the Print Buffer (4")

#### 4. Using the Print Buffer (final draft)

##### 4-11 INSTALLING THE PRINT BUFFER

The Print Buffer should normally be installed at the same time that the Drive C RAM-disk is installed using the ECL command.

The general rules are:

TO INSTALL THE FIXED PRINT BUFFER, THE PRINT BUFFER SIZE FOLLOWS THE ECL COMMAND WHEN LOADING Drive C.

TO INSTALL THE DYNAMIC PRINT BUFFER, THE LETTER P FOLLOWS THE ECL COMMAND WHEN LOADING Drive C.

IF YOU USE THE RENAME OPTION WITH THE ECL COMMAND, THE PRINT BUFFER OPTION FOLLOWS THE NEW DRIVE LETTER.

THERE MUST BE A SPACE BETWEEN THE ECL COMMAND AND THE PRINT BUFFER OPTION.

BUFFER SIZE	BUFFER TYPE	RAM-disk NAME		
		A:	B:	C:
16K	FIXED	ECL A 16	ECL B 16	ECL 16
32K	FIXED	ECL A 32	ECL B 32	ECL 32
48K	FIXED	ECL A 48	ECL B 48	ECL 48
64K	FIXED	ECL A 64	ECL B 64	ECL 64
80K	FIXED	ECL A 80	ECL B 80	ECL 80
96K	FIXED	ECL A 96	ECL B 96	ECL 96
112K	FIXED	ECL A 112	ECL B 112	ECL 112
128K	FIXED	ECL A 128	ECL B 128	ECL 128
VARIABLE	DYNAMIC	ECL A P	ECL B P	ECL P

The Print Buffer is automatically removed when the RESET button is pressed. To change the Print Buffer type or fixed size, press the RESET button and re-install Drive C with a new Print Buffer option.

To eliminate the Print Buffer entirely, give the command: ECU I

Refer to Section 4-17 for a complete discussion of the ECU I feature.

NOTE: ECU.COM is normally on the Drive C unit since ECL automatically copies ECU.COM over to the Drive C unit (regardless of the unit's drive name) if you select the Print Buffer as part of the ECL command.

If ECU.COM is not present on floppy drive A: when you run ECL with a Print Buffer option specified, the following helpful message will appear on the screen:

**Note: Print Buffer Utility (ECU.COM) not available**

#### 4. Using the Print Buffer (final draft)

##### 4-12 THE FIXED PRINT BUFFER

The Fixed Print Buffer is installed as part of the ECL command.

You should have run the ECU E command at the end of Section 4-9 to erase the contents of the Drive C unit. If you have not run ECU E<CR> do so now.

Press the RESET button.

Make sure your EC DEMO DISK is in drive A: and press <CR> to load CP/M+. The A> should appear on your screen.

A>ECL<CR>

Install Drive C as A:  
WITHOUT the Fixed Print Buffer

A>SHOW C:<CR>

Run SHOW for C: (the Drive C unit)  
from A:

C: RW, Space: 378k

Assumes a 384K Drive C, a 192K Drive C  
unit will display Space: 189K

This SHOW command displays the amount of RAM-disk Space available for files.

SHOW calculates the Space available by subtracting the space necessary for the Directory AND the space allocated to all files already on the drive AND any space used for Print Buffer FROM the total drive size.

Sample SHOW space calculation for Drive C with NO Print Buffer installed:

Maximum RAM-disk space:	384K	192K
- Directory space:	- 4K	- 2K
- Print buffer used:	- 0K	- 0K
- File space used:	- 2K	- 1K (for ECN.COM)
Total Space available:	378K	189K

When using the Dynamic Buffer, only space actually containing characters temporarily stored in the Print Buffer will be subtracted by the SHOW calculation. If the Print Buffer is empty, SHOW will display the entire remainder of the drive as free Space.

However, when using the Fixed Buffer, the space allocated to Print Buffer (from 16K to 128K) is subtracted from the space available for RAM-disk. SHOW will therefore display the Space available for file storage as 16K to 128K less than the total drive space.

Press the RESET button.

Press <CR> to load CP/M+. The A> should appear on your screen.

A>ECL 16<CR>

Install Drive C as C: with 16K  
Fixed Print Buffer



#### 4. Using the Print Buffer (final draft)

A>SHOW C:<CR>

Run SHOW of C: (Drive C unit)

C: RW, Space: 356k

(or 168k with 192K Drive C)

The 16K Fixed Print Buffer is now installed. This time, SHOW displays the Space available on the Drive C RAM-disk has been reduced by 28K on a 384K Drive C (or by 24K on a 192K Drive C).

Sample SHOW space calculation for Drive C with 16K Fixed Print Buffer:

Maximum RAM-disk space:	384K	192K
- Directory space:	- 4K	- 2K
- Print buffer used:	- 16K	- 16K
- File space used:	- 8K	- 6K (for ECN.COM and ECU.COM)
Total Space available:	356K	168K

#### 5.5 - ILLUSTRATION - 16K fixed buffer installed (3")

If you type an incorrect size for the Fixed Buffer, ECL 27 for instance, the Drive C RAM-disk will be installed but no Print Buffer will be installed. The following message will appear on the screen:

**Bad Print Buffer Parameter, not loaded**

If you have files on the RAM-disk and re-install a Fixed Buffer which is larger than the available space on Drive C, the Dynamic Buffer will automatically be installed instead. The following message will appear on the screen:

**Not enough space for Fixed Print Buffer**

#### 4. Using the Print Buffer (final draft)

##### 4-13 THE DYNAMIC PRINT BUFFER

The Dynamic Print Buffer is installed with the ECL command using the 'P' option.

Press the RESET button and press <CR> to load CP/M+. The A> should appear on screen.

A>ECL A P<CR>	Install Drive C as A: with the Dynamic Print Buffer, P
C>SHOW A:<CR>	Run SHOW to check the space available on the Drive C unit
A: RW, Space: 378k	(or 184k for a small Drive C)

The Dynamic Print Buffer, the 'P' option, is now installed. Notice that the entire disk space is shown as available since the Dynamic Print Buffer is empty.

Sample SHOW space calculation for 384K Drive C unit with Dynamic Print Buffer:

Maximum RAM-disk space:	384K	192K
- Directory space:	- 4K	- 2K
- Print buffer used:	- 0K	- 0K
- File space used:	- 8K	- 6K (for ECN.COM and ECU.COM)
Total Space available:	372K	184K

The Dynamic Print Buffer constantly changes size as more or less file space is used in the RAM-disk. SHOW will automatically show the RAM-disk reduced in size ONLY when the Dynamic Buffer actually contains output for the printer.

C>PIP A:=C:*. *[V<CR>	Run PIP from C: to copy all of the EC DEMO DISK onto A: (the Drive C unit)
C>A:<CR>	Log onto drive A: (the Drive C unit)

##### 5.6 - ILLUSTRATION - BLOCK OF DYNAMIC BUFFER AND RAM-disk (3")

#### 4. Using the Print Buffer (final draft)

##### 4-14 USING THE DYNAMIC PRINT BUFFER

Make sure you still have your EC DEMO DISK in the top floppy (now drive C:).  
REMOVE your WordStar disk from drive B: and put your EC USER DISK in drive B:.

A>PIP A:=B:PRN.TST[V<CR>		Copy PRN.TST from B: to A: (the Drive C)
A>SHOW A:<CR>		Check the Space available
A: RW, Space: 318k		(or 141k with a 192K unit)

Make sure your printer is ON, has paper and is ready to print.

A>PIP LST:=PRN.TST<CR>		Print PRN.TST using PIP
------------------------	--	-------------------------

Your printer should now be printing the Drive C Print Test. When the entire PRN.TST file is in the Dynamic Print Buffer, the A> will reappear on your screen. You can now continue using your Osborne just as if you weren't printing at all.

TYPE THE FOLLOWING COMMAND WHILE YOUR PRINTER IS PRINTING:

A>SHOW A:<CR>		Run SHOW while PRN.TST is printing
A: RW, Space: 310k		(or 133k with a 192K unit)

SHOW will indicate that the space available on the RAM-disk has been decreased by the size of the PRN.TST file. The entire contents of PRN.TST has been transferred into the the Dynamic Buffer.

NOTE: If you have a large internal buffer in your printer, the PRN.TST file may transfer from the Dynamic Buffer to your printer's buffer so quickly that the Buffer space may already have been returned to the RAM-disk by the time you run SHOW.

The Dynamic Buffer space will be available for use again as RAM-disk only when the Dynamic Buffer has finished printing the PRN.TST file.

Please WAIT for your printer to stop printing before continuing with the next step.

A>SHOW A:<CR>		Run SHOW after PRN.TST has been printed
A: RW, Space: 318k		(or 141k with a 192K unit)

The Dynamic Buffer is now empty and the Extended Directory will show that ALL of the Drive C unit is again available as RAM-disk.

NOTE ABOUT WORDSTAR AND THE PRINT BUFFER:

Don't expect miracles when using the Print Buffer with WordStar. WordStar outputs characters relatively slowly compared with other programs like SuperCalc, dBASE II, and PIP LST:. These other programs will show a greater improvement in speed than WordStar when using the Drive C Print Buffer. In general, you will see the greatest improvement for any printing program when using slower printers, especially daisy wheel printers.

#### 4. Using the Print Buffer (final draft)

Here is a test you can do to determine the MAXIMUM rate your WordStar will print:

1. Make sure the Print Buffer is installed.
2. Put WordStar and the PRN.TST file supplied by Drive C on the Drive C unit.
2. Run the ECU W command to pause the Print Buffer.
3. Print the file PRN.TST using the P function of WordStar. Don't pause for paper changes. (Use continuous form paper)
4. Time how long it takes to come back and remove the "STOP PRINT" menu item.

#### 5.7 - ILLUSTRATION - BLOCK OF DYNAMIC PRINT BUFFER OPERATION (7")



#### 4. Using the Print Buffer (final draft)

#### 4. Using the Drive C Utility Program (final draft)

##### CONTENTS

- 4-15 ECU - The Drive C Utility Program
- 4-16 Using ECU S - The Space option
- 4-17 Using ECU I - The Install/Un-Install option
- 4-18 Using ECU to control the Drive C Print Buffer
- 4-19 Using ECU D - The File Delete option
- 4-20 Using ECU without the menu
- 4-21 ECU E - Erasing the RAM-disk

##### 4-15 ECU - THE Drive C UTILITY PROGRAM

ECU.COM, the Drive C Utility program, provides a number of powerful features to use with your Print Buffer.

A>ECU<CR>

Run ECU from A:

The command ECU without a parameter specified will display the ECU menu.

Drive C: RAM-disk UTILITY PROGRAM. Version 1.06.

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---

Buffer: type - dynamic status - normal

- S - SHOW available buffer SPACE.
  - D - DELETE a file to create SPACE.
  - I - INSTALL/UN-INSTALL print buffer.
  - 
  - Z - ZAP - clear the print buffer.
  - W - WAIT - pause print buffer operation.
  - R - RESTART - continue print buffer operation.
  - 
  - E - ERASE all Drive C: files.
  - X - EXIT to CP/M.
- 

Please enter one of the above options:

An explanation of the Type and Status fields of the ECU display follows:

#### 4. Using the Drive C Utility Program (final draft)

The type and current status of the Print Buffer will always be displayed first.

**Buffer: type - dynamic status - normal**

TYPE indicates whether the Print Buffer is Fixed or Dynamic. If the Print Buffer is Fixed, TYPE will show the size of the Fixed Print Buffer.

If you do not install the Print Buffer, the TYPE line will be blank and the status will be NOT INSTALLED.

##### List of various TYPE Messages:

<b>___K Fixed Buffer</b>	Size of Fixed Print Buffer (See chart in section 4-11)
<b>dynamic</b>	Dynamic Print Buffer P
<b>(BLANK)</b>	Print Buffer NOT installed

The STATUS indicates the current condition of the Print Buffer.

##### List of various STATUS Messages:

<b>normal</b>	installed
<b>NOT INSTALLED</b>	Print Buffer NOT installed
<b>**WAITING**</b>	Print Buffer has been interrupted

##### SPECIAL NOTE ABOUT WORDSTAR AND ECU:

You can run the ECU program from the WordStar <<OPENING MENU>> using the 'R' command. DO NOT RUN THE ECU I COMMAND FROM WORDSTAR, OR USE THE I OPTION WHEN RUNNING ECU FROM WORDSTAR. ECU I may totally confuse WordStar's print output.

#### 4. Using the Drive C Utility Program (final draft)

##### 4-16 USING ECU S - THE SPACE OPTION

The SPACE option 'S' shows how much space is available for use as the Dynamic Print Buffer.

Please enter one of the above options: S

There is \_\_\_K of SPACE available for dynamic buffer.

Please note the amount of SPACE available before returning to CP/M+.

Please enter one of the above options: X

The 'X' option returns you to CP/M+.

A>SHOW A:<CR>

Run SHOW to check Space on A:

SHOW indicates that more space is left on the Drive C unit than was shown by the ECU Space option.

The ECU S (Space) command will accurately tell you how much space is available for the Dynamic Print Buffer.

You will notice that SHOW and ECU S will always display Space values which differ by 8K bytes. The Print Buffer software always keeps this fixed difference between files on RAM-disk and the Print Buffer as a safety margin to avoid "collisions" between the two.

#### 4. Using the Drive C Utility Program (final draft)

##### 5.8 - ILLUSTRATION - Dynamic Buffer and CP/M+ file allocation (6")

The ECU Space option will tell you how much space is available for the Dynamic Print Buffer, if the Dynamic Buffer is installed.

If you are using the Fixed Buffer the ECU Space option will tell you how much space would be available IF you RESET and reinstall the Dynamic Buffer.

PLEASE NOTE THAT THE ECU SPACE OPTION WORKS EVEN IF THE FIXED BUFFER IS INSTALLED OR IF NO PRINT BUFFER IS INSTALLED.



#### 4. Using the Drive C Utility Program (final draft)

##### 4-17 USING ECU I - THE INSTALL/UN-INSTALL OPTION

With the ECU I option you can remove or reinstall the Print Buffer (whether it's Fixed or Dynamic) after you have run the ECL loader program.

A>ECU<CR>

Run ECU from A: to get the ECU menu.

Drive C: ~~RAM-disk~~ UTILITY PROGRAM. Version 1.06.

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---

Buffer: type - dynamic

status - normal

S - SHOW available buffer SPACE.

D - DELETE a file to create SPACE.

I - INSTALL/UN-INSTALL print buffer.

—

Z - ZAP - clear the print buffer.

W - WAIT - pause print buffer operation.

R - RESTART - continue print buffer operation.

—

E - ERASE all Drive C: files.

X - EXIT to CP/M.

---

Please enter one of the above options: I

After typing the I you will see a message which states:

Print buffer has been UN-INSTALLED.

Notice that the type has been blanked and the status changed to: NOT INSTALLED

Press I again. Now the previous buffer type is restored and the status is set to normal. A message is also displayed:

Print buffer has been INSTALLED.

Exit back to CP/M+ for the next section.

Please enter one of the above options: X

\*\*\* CAUTION \*\*\* IMPORTANT \*\*\*

Un-Installing the Print Buffer has the same effect as the ECU Z command, i.e. ALL of your print output still in the buffer will be LOST if you Un-Install the buffer while printing or when the Buffer is WAITING.

#### 4. Using the Drive C Utility Program (final draft)

##### 4-18 USING ECU TO CONTROL THE Drive C PRINT BUFFER

First, make sure your printer is ON, has paper and is ready to print.

A>PIP LST:=PRN.TST<CR>

Print PRN.TST using PIP

Your printer should now be printing the Drive C Print Test. When the entire PRN.TST file is in the Dynamic Print Buffer, the A> will reappear on your screen, returning control of your Osborne back to you. Please give the following command WHILE your printer IS printing PRN.TST:

A>ECU<CR>

Please enter one of the above options: W

Print buffer is WAITING.

The ECU W command (WAIT) pauses output from the Print Buffer to the printer without affecting the contents of the Print Buffer.

PLEASE NOTE: If your printer has an INTERNAL BUFFER, it will CONTINUE to print the contents of ITS OWN BUFFER until it's EMPTY. The ECU W command cannot affect characters after they are sent to the printer.

##### 5.10 - ILLUSTRATION - ECU WAITING AND PRINTER INTERNAL BUFFER (5")

#### 4. Using the Drive C Utility Program (final draft)

Now restart the Print Buffer output as follows:

**Please enter one of the above options: R**  
**Print buffer has been RESTARTED.**

ECU R (RESTART) will cause the Drive C Print Buffer to resume printing after being interrupted by ECU W and will change the status back to "normal".

Your printer should again be printing PRN.TST.

**Please enter one of the above options: Z**  
**Print buffer has been ZAPPED.**

ECU Z (ZAP) immediately clears the contents of either the Fixed Print Buffer or the Dynamic Print Buffer. The space allocated to the Print Buffer may not be released for RAM-disk use until CP/M+'s own small buffer outputs a few characters more.

AGAIN, please NOTE that data in your printer's own PRINT BUFFER will CONTINUE to be printed EVEN IF the Drive C Print Buffer has been CLEARED by ECU Z.

Once your print file is in the Drive C Print Buffer, it cannot be accessed by its name, nor can multiple files in the print buffer be separated and manipulated individually. If several files are in the Print Buffer, they will ALL be cleared by ECU Z.

ECU W, R and Z work with both the Fixed Buffer and the Dynamic Buffer.

#### 5.11 - ILLUSTRATION - Multiple files in the Print Buffer (3")

#### 4. Using the Drive C Utility Program (final draft)

##### 4-19 USING ECU D - THE FILE DELETE OPTION

If you need additional Print Buffer space, you can delete files from the RAM-disk.

Please enter one of the above options: D

ECU will display a directory list of each file on the RAM-disk plus its size and a message telling you how much space is free for use by the Print Buffer.

There is \_\_\_K buffer SPACE available.

You can press <ESC> at any time to return to the main ECU menu.

Press <ESC> to rerun.

FILE TO DELETE: ECL.COM<CR>

There is \_\_\_K buffer SPACE available.

Do you want to delete another file (Y/N)? N

Files must be deleted individually and must be named exactly. The CP/M+ '\*' (WILDCARD) convention cannot be used. Delete ECL.COM for this example.

After deleting one file ECU will ask you if you want to delete more. If you answer 'Y' (for YES) you can enter more file names to delete. If you answer 'N' (for NO) ECU will return to its main menu.

NOTE: With CP/M+, in order to erase a RO (Read-Only) file, you first have to run SET.COM to change the file to RW (Read-Write). ECU, unlike the ERASE function of CP/M+, WILL delete RO (Read-Only) files.

The new SPACE available to the Print Buffer will be displayed after each file you specify is deleted.

#### 4. Using the Drive C Utility Program (final draft)

##### 4-20 USING ECU WITHOUT THE MENU

All of the ECU options except EXIT and file DELETE can be executed from the CP/M+ prompt without displaying the ECU menu.

For example, the SPACE option can be used without the full menu by typing ECU and the option letter 'S'.

First, exit back to CP/M+ from the ECU menu.

**Please enter one of the above options: X**

A>ECU S<CR>

Run ECU S from drive A:.

Notice that this command skips the menu and just tells you how much Print Buffer space you have available, then returns to the CP/M+ prompt.

The general rule for "menu-less ECU" is:

ECU FOLLOWED BY THE OPTION LETTER (S,E,I,W,R,Z) EXECUTES ONE SPECIFIC ECU FUNCTION WITHOUT DISPLAYING THE MENU AND RETURNS TO THE CP/M+ PROMPT.

ECU S	Space
ECU I	Install (or un-Install)
ECU Z	Zap
ECU W	Wait
ECU R	Restart
ECU E	Erase all

NOTE: ECU D (Delete file) will always give you the ECU menu and you will have to type 'D' again to enter the Delete function.



#### 4. Using the Drive C Utility Program (final draft)

##### 4-21 ECU E - ERASING THE RAM-disk

There are many times when you will want to erase ALL the files on the Drive C RAM-disk (for instance, if you wanted to reload a new set of files using QuickPac).

A>ECU E<CR>

ECU E will erase ALL files on the Drive C unit, including any files which are RO (Read-Only), regardless of user area or drive name. The only file NOT erased by ECU E is the Drive C:.SYS file in user area 15.

To prevent you from accidentally erasing all your files (a most annoying event) ECU E asks you twice if you are really sure.

Erase all (including R/O) Drive C: files (Y/N)? Y

Are you absolutely certain (Y/N)? Y

All Drive C: files have been DELETED.

A>DIR<CR>

Check drive A: directory.

Drive A: is now blank with the exception of the Drive C:.SYS file (still in user 15).

ECU E will erase ONLY the RAM-disk file storage space, NOT the contents of the Print Buffer.

ECU E does not affect Print Buffer operation, unless you erase a file which has not yet been completely sent to the Print Buffer for output. For example, if you run ECU E from WordStar (using the R command) while it is printing a file from Drive C you will erase the file, and WordStar itself as well, if WS.COM was on Drive C.

Press the RESET button.

You are finished with this section on Learning the Drive C Skills.

## 5. Using Your New Drive C Skills (final draft)

### CONTENTS

Sections 5-1 to 5-3    Using QuickPac  
Sections 5-4 to 5-11    Saving Drive C files  
Sections 5-12 to 5-14    Making it even more automatic

This section of the manual shows you how to use the other Drive C features easily and automatically.

In this section you will learn how to use QuickPac to set up Drive C.

Several methods for saving Drive C files will be demonstrated. The most powerful, ARCHIVE (ECA A), can save files much larger than the storage capacity of a diskette.

The RETRIEVE program (ECA R) reconstructs your Archived files onto Drive C.

Finally, we discuss powerful methods of combining QuickPac and RETRIEVE to make using Drive C even easier.

When you've finished this section, don't forget to check the APPENDICES for additional helpful hints and technical information.



## 5. Using QuickPac (final draft)

### CONTENTS

- 5-1 Making Drive C automatic
- 5-2 ECQINS - Installing the QuickPac options
- 5-3 Using QuickPac

### 5-1 MAKING Drive C AUTOMATIC

QuickPac (ECQ.COM) automatically installs any of the Drive C features, copies files onto the Drive C RAM-disk and even runs a program. QuickPac runs automatically each time you start your Executive.

QuickPac Install (ECQINS.COM) is a menu-driven program that asks you which options you wish QuickPac to perform. Your choices are stored in two special files, EXECST.COM and ECQ.SUB, which are accessed later by QuickPac. Each of these files specifies different QuickPac options.

With ECQINS you can create a custom ECQ.SUB file for each set of application programs. For instance, you might create one ECQ.SUB file that copies WordStar and your WordStar document files onto Drive C, and another ECQ.SUB file that copies SuperCalc and your .CAL files

The EXECST.COM program is created by ECQINS and specifies the Print Buffer option chosen by you.

QuickPac will allow you to install the following options:

1. Copy the contents of one or both of the diskettes in your floppy drives onto Drive C.
2. Rename Drive C as drive A: or drive B:.
3. Install any of the nine Print Buffer sizes.
4. Automatically run a program on Drive C or on one of your floppy drives.

CP/M+ is set up to run any program named EXECST.COM when you press <CR> after either power up or pressing the RESET button.

PLEASE NOTE: You have many different EXECST.COM files on your Osborne diskettes. Be sure not to mix up your EXECST.COM files. They are not the same even though they have the same name.

In the next section, as a practical exercise you will use the QuickPac Install program to set up QuickPac to install Drive C as A: with the Dynamic Print Buffer, to copy your WordStar disk onto the Drive C RAM-disk and to run WordStar.

## 5. Using QuickPac (final draft)

### 5-2 ECQINS - INSTALLING THE QUICKPAC OPTIONS

Open BOTH disk drive doors, turn power OFF to your Osborne, then turn power back ON.

Put your EC DEMO disk in drive A: and the EC USER DISK in drive B:.

Press <CR> to load CP/M+. The A> should appear on your screen.

A>PIP<CR>	Run PIP from A: (EC DEMO DISK)
*A:=B:ECQ*.*<CR>	Copy ECQ (QuickPac) files to A: from B:
*A:=B:ECA.COM<CR>	Copy ECA.COM (Archive) to A: from B:
*A:=B:SUBMIT.COM<CR>	Copy SUBMIT.COM to A: from B:
*^C	Press ^C to exit PIP

ECQINS, the QuickPac Install program, is menu-driven. It lets you custom tailor QuickPac to fit your needs.

A>ECQINS<CR>	Run ECQINS (QuickPac Install) from A:
--------------	---------------------------------------

The QuickPac Installation title screen will appear. Press any key to start ECQINS.

Pressing <ESC> will let you restart the QuickPac Install program or exit to CP/M+. You can press <ESC> at any time.

#### QUICKPAC INSTALL - COPY DISKS

**Do you want to copy disks to Drive C: (Y/N)?** Y

This question asks whether you want QuickPac to copy the complete contents of either one or both of the floppy disks in your drives onto the Drive C unit.

**Is your unit 384K (Large), or 192K (Small) (L/S)?**

Please indicate the size of your Drive C unit, L for 384K, S for 192K.

Only if you have a 192K Drive C, the following question will appear:

**Will your disks be Single or Double density (S/D)?** D

Normally you use only Double-density disks on an Executive so type 'D'. QuickPac asks about density to check that you don't try to copy two 185K double-density diskettes onto a 192K Drive C.

**Which disks do you want copied to Drive C:?**

**Disk A: or B: or both (A/B/2)?** B



## 5. Using QuickPac (final draft)

When QuickPac first loads the Drive C software (ECL.COM) the Drive C is always temporarily named drive C:. QuickPac will rename Drive C (if you've so specified) only AFTER copying the floppy disk files over to the Drive C unit. Therefore, when specifying which disks to copy FROM, use the USUAL Executive floppy disk drive names as if Drive C was NOT installed.

When you program your own QuickPac choices, you should answer A to copy the files from drive A:, B for drive B: or 2 to copy the contents of BOTH floppy diskettes. If you have a 192K Drive C you can answer only 'A' or 'B'.

**Are the above choices correct (Y/N)?** Y

If you've made an error in the copying instructions, QuickPac will let you start over if you answer 'N'.

### QUICKPAC INSTALL - RENAMING THE Drive C RAM-disk

**Do you want your Drive C: unit to become  
drive A:, drive B: or drive C: (A/B/C)?** A

Answer A to name the Drive C unit drive A: for this exercise. Again, QuickPac will rename the drives in the same way you would if you were running ECL manually.

### QUICKPAC INSTALL - INSTALLING THE PRINT BUFFER

**Do you want to install the Print Buffer (Y/N)?** Y

**Please choose one of the above fixed buffer sizes  
or press (P) for the dynamic buffer:** P

Any of the Fixed Buffers can be installed by typing the appropriate letter or the Dynamic Buffer can be installed by typing P. For this exercise, please type P.

### QUICKPAC INSTALL - RUNNING A PROGRAM AUTOMATICALLY

**Do you want to run a program (Y/N)?** Y

**On which disk drive will the program be (A/B/C)?** A

This part of QuickPac allows you to specify a program to be run automatically. You must specify on which logical drive the program file is located. If you've renamed the drives, you must specify the FINAL, NEW name of the Drive C unit or the FINAL, NEW name of the floppy drive where the program file is located.

**Enter the command (i.e. WS YOURFILE.EXT<CR> ):**  
>A:WS<CR>

The drive name you previously chose for the program is automatically inserted by ECQINS into the program command line. You've now told QuickPac to run WordStar from drive A:, the (renamed) Drive C unit.

## 5. Using QuickPac (final draft)

Later, when make your own command selection, you can give any CP/M+ command line, for example, SUBMIT TEST, MBASIC HA, or B:DBASE A:MAILIST.

### QUICKPAC INSTALL - CREATING ECQ.SUB

You have chosen the above options.

If they are correct press <Return>.

To change any options press <ESC>.

This screen shows you the choices you've made for QuickPac. If you've made a mistake, press the <ESC> key and try again. If your choices are correct, press <CR>.

Do you want to store these files on drive A:, B: or C:? A

ECQ.SUB and the special EXECST.COM must be stored on the diskette you will use for autoloading, i.e. the same diskette with ECL.COM, ECQ.COM and PIP.COM.

NOTE: ECQINS creates new copies of ECQ.SUB and EXECST.COM. The new files will overwrite the OLD copies of the files that were on the EC DEMO DISK.

Since you are storing ECQ.SUB and EXECST.COM now, you should use the name of the drive as it is named RIGHT NOW. In this case, it is the upper floppy, drive A:. Remember, we haven't installed Drive C in this exercise.

**\*\* The QUICKPAC installation has been completed \*\*** plus a beep!

### CHECKING THE NEW QUICKPAC CONFIGURATION

A>DIR[FULL<CR>

DIRectory of EC DEMO DISK in A:.

Directory For Drive A: User 0

Name	Bytes	Recs	Attributes	Name	Bytes	Recs	Attributes
CPM3	SYS	18k	140 Sys RO	DIR	COM	15k	114 Dir RW
ECA	COM	10k	77 Dir RW	ECL	COM	6k	47 Dir RW
ECQ	COM	1k	7 Dir RW	ECQ	SUB	1k	1 Dir RW
ECQINS	COM	10k	80 Dir RW	ECU	COM	5k	40 Dir RW
ERASE	COM	4k	29 Dir RW	EXECST	COM	1k	1 Dir RW
PIP	COM	9k	68 Dir RW	SHOW	COM	9k	66 Dir RW
SUBMIT	COM	6k	42 Dir RW				

Total Bytes = 95k Total Records = 712 Files Found = 13  
Total 1k Blocks = 95 Used/Max Dir Entries For Drive A: 14/ 64

If your EC DEMO DISK now contains the files listed above you are ready to try out this new QuickPac configuration, so proceed to the next section.

NOTE: ECQINS can be run even if you don't have a Drive C in your Osborne, or if you have not yet run the ECL loader.

## 5. Using QuickPac (final draft)

### 5-3 USING QUICKPAC

Remove the EC USER DISK from drive B:.

You should still have the EC DEMO DISK (prepared in section 5-2) in floppy drive A:.

Put your usual WordStar system disk in drive B:.

Press the RESET button.

Press <CR>. Your Osborne will automatically run the QuickPac programs using the options you stored earlier in the ECQ.SUB and EXECST.COM files.

You will find that QuickPac usually takes about one minute to load, copy one floppy disk to Drive C and run a program from Drive C.

WordStar should eventually run on drive A:, the Drive C unit.

Press 'X' to EXIT WordStar.

## 5. Using QuickPac (final draft)

### 6.1 ILLUSTRATION - BLOCK OF THIS QUICKPAC ROUTINE (8")





## 5. Using QuickPac (final draft)

A>DIR[FULL<CR>

Check the DIRectionary listing of the Drive C, now renamed as drive A:, to see if all the files on your WordStar disk have been copied to A:.

Notice that there is a new file on the Drive C unit, DCLOADED.SYS. Whenever QuickPac automatically copies files onto Drive C, it also generates DCLOADED.SYS.

Press the RESET button.

Now press <CR> to start QuickPac a second time.

QuickPac will reinstall ALL the same parameters as before, including running WordStar from the Drive C unit, but WILL NOT COPY the files from the disk in B: onto Drive C.

The DCLOADED.SYS file on the Drive C unit alerts QuickPac that it has already copied files over to Drive C and needn't copy them again.

Press 'X' to EXIT WordStar again back to the A> prompt.

NOTE: If you specifically want to reload another set of programs and files onto your Drive C unit using QuickPac, you must first erase the DCLOADED.SYS file. You can use the ERA D\*.SYS command, or the ECU D command, or even the ECU E command (to erase ALL files on Drive C).

This completes the section on QuickPac. Please proceed to the next section, which covers Archive and Retrieve operations.

## 5. Saving Drive C Files (final draft)

### CONTENTS

- 5-4 Getting Ready
- 5-5 ARCHIVE
- 5-6 ARCHIVE - Choosing which files to store
- 5-7 ARCHIVE - Storing files on floppy disk
- 5-8 The ARCHIVE Diskette
- 5-9 Using an ARCHIVE Diskette Set
- 5-10 ARCHIVE - Saving all of Drive C
- 5-11 RETRIEVE - Recovering files to Drive C

When you've completed working with your Drive C files, they must be saved (backed up) onto floppy disks unless you are using BackPac. There are several ways to do this, depending on your application.

You can use PIP, NSWEEP or WordStar to backup individual files or groups of files from Drive C to floppy disk. Refer back to Section 4-4 for more details.

The following sections explain how to use the most powerful and fastest backup method, ARCHIVE AND RETRIEVE.

## 5. Saving Drive C Files (final draft)

### 5-4 GETTING READY

IF YOU HAVE A 192K Drive C - You will need one blank, pre-formatted diskette.

IF YOU HAVE A 384K Drive C - You will need two, plus your SuperCalc disk.

Please label one of the blank disks BACKUP 1 and the other, if needed, BACKUP 2.

Step 1. Open BOTH disk drive doors, turn power OFF to your Osborne, pause for about 3 seconds, then turn power back ON again.

Step 2. Make sure your EC DEMO DISK is in floppy drive A: and that your WordStar Disk system disk is still in floppy drive B:.

Step 3. Press <CR> to load CP/M+. QuickPac will load, then WordStar will load and run from drive A: (the Drive C unit).

Step 4. Press 'X' to exit from WordStar back to the CP/M+ A> prompt.

Step 5. Remove your WordStar disk from drive B: and put your EC USER DISK in B:.

Step 6. A>PIP A:=B:ECA.COM[V<CR>                      Copy ECA.COM to Drive C from B:

If you have a 192K Drive C unit, SKIP Steps 7 & 8 and proceed to Step 9.

If you have a 384K Drive C unit, follow Steps 7-8 to copy SuperCalc onto Drive C

If you have more than 180K space available on your 384K Drive C you will need to copy some more files from one of your other floppy disk so that the total space used on the Drive C is larger than the capacity of one floppy, i.e. 185K.

Remove your EC USER DISK from drive B: and put your SuperCalc disk in drive B:.

Step 7. A>PIP A:=B:\*. \*[V<CR>                      Copy all of floppy B: onto A: (Drive C)

If you get a message from PIP such as:

DESTINATION IS R/O, DELETE (Y/N)?    N                      Type 'N' to not delete old file.  
\*\*NOT DELETED\*\*

Step 8. A>SHOW A:<CR>                      Check to see that there is LESS THAN  
180K Space available.

Step 9. Remove your WordStar (or SuperCalc) disk from drive B: and put your BACKUP 1 Disk in B:

A>PIP B:DIRTEST.COM=DIR.COM<CR>                      Copy DIR.COM onto BACKUP 1 Disk and  
rename it to DIRTEST.COM.

Now you are ready to proceed with the ARCHIVE exercises.

## 5. Saving Drive C Files (final draft)

### 5-5 ARCHIVE

One of the major advantages of your Drive C is its ability to accomodate files much bigger than your floppy disks.

ECA.COM, the ARCHIVE and RETRIEVE program, lets you backup these big Drive C files onto a set of backup diskettes.

ECA is much faster than PIP, and can copy individual files and groups of files (like PIP) as well as the entire contents of the Drive C unit.

A>ECA<CR>

You will see some legalistic messages and then the question:

ARCHIVE OR RETRIEVE (A/R)? A

ARCHIVE will store Drive C files onto any combination of single- and double-density diskettes.

You can Rerun or Exit ARCHIVE at any time by pressing the <ESC> key.

STORE ONTO FLOPPY (B/C)? B

ARCHIVE always knows the current name of your Drive C unit and will only let you backup files to one of your floppy drives, in this case drive B: or drive C:.

ARCHIVE uses a unique file format. When you save files onto floppy disk using ARCHIVE, you will NOT be able to use the files until they have been reloaded onto the Drive C unit using the RETRIEVE portion of ECA.

In order to easily identify your ARCHIVE floppy set, you need to enter up to 50 characters for the ARCHIVE SET LABEL. You MUST enter a label so that ARCHIVE can identify each ARCHIVE SET, but you do not have to use the full 50 characters available.

Helpful information can be entered as part of the LABEL, such as the date or even the time. It's a good idea to give each ARCHIVE SET a unique label so you won't have to worry about mixing different sets.

Enter LABEL:

[TEST SET EC EXERCISES<CR>

]

## 5. Saving Drive C Files (final draft)

### 5-6 ARCHIVE - CHOOSING WHICH FILES TO STORE

The initial ARCHIVE menu is displayed after a paragraph of explanations:

<TAB>     Store ALL files (\*.\*)  
<RETURN>   Store specific files  
<ESC>     Rerun or Exit  
D         Directory of Drive C:

Please enter your choice. | D

ARCHIVE can display a directory (like DIR) of all the files on your Drive C unit and their sizes. You do not have to leave ARCHIVE in order to check the contents of Drive C.

A <CR> by itself in response to the FILES TO STORE: query moves you to the next ARCHIVE command entry.

FILES TO STORE: PIP.COM<CR>  
FILES TO STORE: WS\*.\*<CR>  
FILES TO STORE: <CR>

You've instructed ARCHIVE to copy PIP.COM and the WordStar files, WS\*.\* onto the backup diskette in B:.

PLEASE NOTE THAT THE CP/M+ WILDCARD FILENAME CONVENTIONS, LIKE WS\*.\*, WORK WITH ARCHIVE.

After you've completed entering the files that you want to backup, the following menu will appear on your screen:

<RETURN>   Begin storing files to floppy  
<ESC>     Rerun or exit  
D         Directory of Drive C:  
L         List of files to be stored  
U         Unselect files  
S         Select more files

Please enter choice.   L

A list of the files you've selected for backup and their sizes will appear. You can always check your selection using the L option before starting the actual copying process.

List of files selected to be Archived:

WS        .COM 18   WSOVLY1 .OVR 34   WSMGS   .OVR 30   PIP        .COM 10



## 5. Saving Drive C Files (final draft)

Next, you'll get the same six key choices as before:

Please enter choice. S

The S option will let you SELECT additional files to backup in this set.

<TAB>	Store ALL files (*.*)
<RETURN>	Store specific files
<ESC>	Rerun or Exit
D	Directory of Drive C:
L	List files to be stored

Please enter choice. <CR>

FILES TO STORE: DIR.COM<CR>  
FILES TO STORE: <CR>

Please enter choice. L

The LIST of selected files now includes DIR.COM.

Please enter choice. U

<TAB>	Un-Store ALL files (*.*)
<RETURN>	Un-Store specific files
<ESC>	Rerun or Exit
D	Directory of Drive C:
L	List files to be stored

Please enter choice. <CR>

FILES TO UN-STORE: PIP.COM<CR>  
FILES TO UN-STORE: <CR>

The U option, UN-STORE, lets you remove files from the list of files to be transferred. This can be a very convenient tool.

Suppose you wanted to backup ALL the .DOC files EXCEPT ONE. You would store \*.DOC and then UN-store the one you didn't want.

Please enter choice. L

The LIST option shows that PIP.COM will no longer be stored.

## 5. Saving Drive C Files (final draft)

### 5-7 ARCHIVE - STORING FILES ON FLOPPY DISK

<RETURN> Begin storing files to floppy  
<ESC> Rerun or exit  
D Directory of Drive C:  
L List of files to be stored  
U Unselect files  
S Select more files

Please enter choice. <CR>

Pressing <RETURN> will now start the actual copying of files onto the backup diskette in drive B:.

Press <RETURN> to begin. <CR>

PLEASE INSERT ARCHIVE DISK #1 INTO FLOPPY DISK B:  
Press <RETURN> to begin. <CR>

**\*\* THE FLOPPY DISK IS NOT BLANK \*\***

Directory for floppy disk B:  
DIRTEST .COM

ARCHIVE will store Drive C files on single- or double-density diskettes. If your diskettes are NOT BLANK, ARCHIVE must erase them before copying onto them.

In this case, a directory of the old files on the backup diskette will appear on the screen. Remember, we put the file DIRTEST.COM onto the BACKUP 1 disk in section 5-4.

IF YOU DO NOT WANT TO KEEP THE OLD FILES ON YOUR BACKUP DISKETTE, ARCHIVE WILL ERASE ALL OF THEM AND USE THE DISKETTE FOR BACKUP.

IF YOU MADE A MISTAKE AND INSERTED A DISKETTE IN DRIVE B: THAT HAS FILES THAT YOU DON'T WANT ERASED, THIS DIRECTORY CHECKING FUNCTION OF ARCHIVE ALERTS YOU.

To avoid deleting all the files on your backup diskette (and the possibility of a catastrophic mistake), all Drive C programs require you to confirm your decision to delete TWICE.

DELETE ALL THESE FILES (Y/N)? Y

<RETURN> Delete files and begin Archiving. <CR>  
(Press any other key to ABORT)

<RETURN> Delete files and begin Archiving.  
(Press any other key to ABORT) **\*\* DELETING \*\***



## 5. Saving Drive C Files (final draft)

ARCHIVE has deleted the files on the BACKUP 1 DISK and is now copying the files chosen onto drive B:.

The file names will be displayed as they are backed up.

### LIST OF FILES STORED:

WS .COM WSOVLY1 .OVR WSMSG5 .OVR DIR .COM

Press <ESC> while ARCHIVE is storing files.

INTERRUPTED...

C Continue  
R Rerun  
X Exit to CP/M+

The ARCHIVE process can be interrupted at any time and then resumed, restarted or aborted.

Press 'C' to continue.

### LIST OF FILES STORED:

When the files you have specified have been stored, the following message appears:

ARCHIVE OPERATION COMPLETED.

Number of disks: 1

Files stored in this set: 4

A>

Back to the familiar 'A>' prompt.

ARCHIVE returns you to CP/M+ when it's finished.

## 5. Saving Drive C Files (final draft)

### 5-8 THE ARCHIVE DISKETTE

A>DIR B:[FULL<CR>

DIRectory of BACKUP 1 Disk in B:

Directory For Drive A: User 0

Name	Bytes	Recs	Attributes	Name	Bytes	Recs	Attributes
TESTSETE AR1	95k	753	Dir RW				
Total Bytes	=	95k	Total Records =	753	Files Found =	1	
Total 1k Blocks =		95	Used/Max Dir Entries For Drive A:	6/	64		

The only file on the BACKUP 1 DISK is TESTSETE.AR1. ARCHIVE will create only ONE backup file which may contain many different CP/M+ files.

The name of the BACKUP file is the first eight characters in the Set Label (SPACES in the Set Label are ignored).

In this case, the Set Label 'TEST SET EC EXERCISES' has become the name TESTSETE.

The file extension AR1 shows that this is the FIRST disk of an ARchive set.

If you had used more than one disk for your ARCHIVE SET, subsequent disks would have been automatically named TESTSETE.AR2, TESTSETE.AR3, etc.

A>TYPE B:TESTSETE.AR1<CR>

Use the CP/M+ TYPE command to look at  
ARCHIVE file TESTSETE.AR1 on BACKUP 1 DISK

ARCHIVE DISK: TESTSETE.AR1  
DISK #1  
LABEL: TEST SET EC EXERCISES  
\$

A>

Back to the 'A>' prompt.

The TYPE command, a CP/M+ utility that's always available, will display the complete SET LABEL. This command lets you check an ARCHIVE disk in case you forgot to put a written label on it.



## 5. Saving Drive C Files (final draft)

### 5-9 USING AN ARCHIVE DISKETTE SET

If you have a small Drive C unit (192K) then you will find it impossible to put enough files onto your Drive C to require two Archive disks.

So, if you have a 192K Drive C, continue with section 5-10, but pay no attention to the parts of this section describing the second Archive disk (the BACKUP 2 DISK).

If you have a 384K Drive C the next exercise will use both BACKUP disks.

A>ECA<CR>

Run ECA from A:

ARCHIVE OR RETRIEVE (A/R)? A

STORE ONTO FLOPPY (B/C)? B

Enter LABEL:

[TEST ALL EC EXERCISES<CR>

]

## 5. Saving Drive C Files (final draft)

### 5-10 ARCHIVE - SAVING ALL OF Drive C

The initial ARCHIVE menu is displayed:

```
<TAB>    Store ALL files (*.*)
<RETURN> Store specific files
<ESC>    Rerun or Exit
D        Directory of Drive C:
```

Please enter your choice. | <TAB>

Pressing <TAB> instructs ARCHIVE to copy ALL the files from Drive C onto as many backup diskettes as are necessary.

ARCHIVE will show that ALL the files on Drive C have been selected to be stored.

```
<RETURN> Begin storing files to floppy
<ESC>    Rerun or exit
D        Directory of Drive C:
L        List of files to be stored
U        Unselect files
S        Select more files
```

Please enter choice. | <CR>

Pressing <RETURN> will now start the copying of ALL Drive C files onto the backup diskette in drive B:.

Press <RETURN> to begin. | <CR>

Keep the BACKUP 1 DISK with the file TESTSETE.ARI on it in drive B: and have your other diskette, labeled BACKUP 2 DISK, available.

```
PLEASE INSERT ARCHIVE DISK #1 INTO FLOPPY DISK B:
Press <RETURN> to begin. | <CR>
```

**\*\* THE FLOPPY DISK IS NOT BLANK \*\***

```
Directory for floppy disk B:
TESTSETE.ARI
```

```
DELETE ALL THESE FILES (Y/N)?  Y
```

```
<RETURN> Delete files and begin Archiving. <CR>
(Press any other key to ABORT)  ** DELETING **
```

LIST OF FILES STORED:

ARCHIVE has deleted TESTSETE.ARI from the BACKUP 1 DISK and is now copying ALL the contents of Drive C onto drive B:.

## 5. Saving Drive C Files (final draft)

Again, if you have a 192K Drive C you can skip the next steps and continue to section 5-11 on Retrieving your Archived files.

When the BACKUP 1 DISK is full, the following message will be displayed:

**THIS ARCHIVE DISK IS FULL**

**PLEASE INSERT DISK #2 INTO FLOPPY DISK B:  
Press <RETURN> to begin.**

Remove the BACKUP 1 DISK from drive B: and insert the BACKUP 2 DISK into drive B:.

**\*\*\*\* DO NOT PRESS ^C WHEN CHANGING ARCHIVE DISKETTES. \*\*\*\***

Pressing <CR> will cause ARCHIVE to continue storing files until ALL the files on Drive C have been saved.

When ARCHIVE is finished, you'll see the message:

**ARCHIVE OPERATION COMPLETED.  
Number of disks: 2  
Files stored in this set: \_\_**

**A>**

The CP/M+ 'A' prompt once again.

If you have a 384K Drive C it required two floppy disks to store ALL the files from Drive C. If there had been ONE big file instead of many small files on Drive C, ARCHIVE would have automatically divided the large file and stored it on a series of ARCHIVE diskettes: TESTALLE.AR1, TESTALLE.AR2, TESTALLE.AR3 etc.

## 5. Saving Drive C Files (final draft)

### 5-11 RETRIEVE

RETRIEVE reloads your ARCHIVE SET onto Drive C.

First, make sure you still have your EC DEMO DISK in floppy drive A:, now named C:.

Second, erase the contents of Drive C using the ECU E command, as shown:

A>C:<CR> | Log onto drive C: (the EC DEMO DISK)

C>ECU E<CR> | Run ECU E (Erase) from floppy C: to  
erase ALL files on the Drive C unit

Erase all (including R/O) Drive C: files (Y/N)? Y  
Are you absolutely certain (Y/N)? Y  
All Drive C files have been DELETED.

C>ECA<CR> | Run ECA from C: (the EC DEMO DISK)

ARCHIVE OR RETRIEVE (A/R)? R

The RETRIEVE program, like ARCHIVE, knows the current name of the Drive C unit and will only let you RETRIEVE from the floppy drives, in this case B: and C:.

RETRIEVE FILES FROM FLOPPY DRIVE (B/C)? B

PLEASE INSERT ARCHIVE DISK #1 INTO FLOPPY DISK B:

FOR THIS EXERCISE, PLEASE INITIALLY LEAVE THE BACKUP 2 DISK IN DRIVE B:, EVEN THOUGH THE PROGRAM ASKS YOU TO INSERT ARCHIVE DISK #1.

If you have a 192K Drive C please put any diskette that is not a Archive disk in drive B:, since you don't have a BACKUP 2 disk.

Press <RETURN> to begin. <CR>

THIS IS NOT ARCHIVE DISK #1.

ARCHIVE DISK: TESTALLE.AR2  
DISK #2  
LABEL: TEST ALL EC EXERCISES

PLEASE INSERT ARCHIVE DISK #1 INTO FLOPPY DISK B:  
Press <RETURN> to begin.

RETRIEVE requires that each ARCHIVE SET be retrieved in order. The .AR1 diskette must be inserted first, then the .AR2 diskette, etc.

RETRIEVE also checked that the diskette you inserted was an ARCHIVE disk and NOT one of your program or data diskettes.

## 5. Saving Drive C Files (final draft)

RETRIEVE identifies an incorrect diskette and asks you to insert another diskette.

Please remove the BACKUP 2 DISK and insert the BACKUP 1 DISK.

DO NOT PRESS ^C WHEN CHANGING ARCHIVE DISKETTES.

PLEASE INSERT ARCHIVE DISK #1 INTO FLOPPY DISK B:  
Press <RETURN> to begin. <CR>

ARCHIVE DISK: TESTALLE.ARI  
DISK #1  
LABEL: TEST ALL EC EXERCISES

Press <RETURN> if Archive set is CORRECT  
OR  
Insert another diskette and press <R> to RETRY. <CR>

After pressing <CR> RETRIEVE will begin copying and reconstructing the Drive C files that were stored on this specific ARCHIVE SET.

RETRIEVE will query you even if you have inserted the #1 disk of an ARCHIVE SET to make sure that you are retrieving the correct ARCHIVE SET.

RETRIEVE will display the files it is reconstructing on Drive C as they are retrieved from the ARCHIVE diskette.

If you have a 192K Drive C, Retrieve will have completed reloading the entire disk, so skip to the last paragraph on this page.

When all the information on the first ARCHIVE diskette has been retrieved, the following message will be displayed:

**THIS ARCHIVE DISK HAS BEEN COMPLETELY RETRIEVED.**

PLEASE INSERT ARCHIVE DISK #2 INTO FLOPPY DISK B:  
Press <RETURN> to begin.

Remove the BACKUP 1 DISK from drive B: and insert the BACKUP 2 DISK into drive B:.

REMEMBER, DO NOT PRESS ^C WHEN CHANGING ARCHIVE DISKETTES.

PLEASE INSERT ARCHIVE DISK #2 INTO FLOPPY DISK B:  
Press <RETURN> to begin. <CR>

Press <CR> and RETRIEVE will continue reconstructing and listing the files from the BACKUP 2 DISK, the second disk in this ARCHIVE SET.

When ALL of the ARCHIVE SET has been retrieved, this message will appear:

**RETRIEVE OPERATION COMPLETED.**  
Archive diskettes read: 2  
Files retrieved: \_\_\_\_ will show the number of files



## 5. Saving Drive C Files (final draft)

You can RETRIEVE onto Drive C even if there are already files on Drive C.

There must, however, be sufficient space on the Drive C RAM-disk for the retrieved files.

If there is not enough space, you will see the message:

**Drive C: DISK SPACE IS FULL.**

**In process of retrieving file: \_\_\_\_\_**

**You must delete some files from Drive C: before attempting to retrieve this Archive set.**

**PLEASE START RETRIEVE OPERATION OVER.**

### \*\*\* IMPORTANT \*\*\*

If you retrieve files with exactly the same name as files already on Drive C the new file (that is, the one from the Archive Disk Set) will overwrite the old file, and the old Drive C file will be lost.

The RETRIEVE program can be run automatically. This method is discussed in Section 5-13, "The Remote Retrieve Command".

You are now finished with the Archive & Retrieve exercises, so proceed to Section 5-12 on using function keys with Drive C.

## 5. Making It Even More Automatic (final draft)

### CONTENTS

- 5-12 Using your Function Keys
- 5-13 The Remote Retrieve command
- 5-14 Remote Retrieve with QuickPac

### 5-12 USING YOUR FUNCTION KEYS

Placing several Drive C commands on your function keys can make using Drive C very simple no matter what your application.

Some suggestions are:

ECL \_\_ <CR>

The Drive C LOAD command with  
your choice of names and Print Buffer

ECN \_ <CR>

The Drive C NAME command

ECU E <CR>

The Drive C ERASE command

ECU \_

Any of the ECU Utility commands

Another command which is can be used to great benefit as a function key is the remote RETRIEVE command.

## 5. Making It Even More Automatic (final draft)

### 5-13 THE REMOTE RETRIEVE COMMAND

Typing ECA R<CR> will automatically load the RETRIEVE function.

RETRIEVE will then ask from which drive to retrieve.

Even more powerful is the ECA R A, B or C command. These commands will immediately begin retrieving without any inputs from you.

The general rule is:

RETRIEVE WILL WORK AUTOMATICALLY USING THE COMMAND ECA R FOLLOWED BY THE LETTER OF THE DRIVE WHICH HAS THE ARCHIVE DISKETTE.

THE DRIVE MUST CONTAIN DISK #1 OF AN ARCHIVE SET.

ECA R A will retrieve from drive A:
ECA R B will retrieve from drive B:
ECA R C will retrieve from drive C:

The most powerful combination is the remote RETRIEVE command with QuickPac.

## 5. Making It Even More Automatic (final draft)

### 5-14 REMOTE RETRIEVE WITH QUICKPAC

RETRIEVE is a much faster means of loading Drive C than PIP.

To use Remote Retrieve with QuickPac, setup a QuickPac disk similar to the EC DEMO DISK using QuickPac Install (ECQINS) as follows:

1. Do NOT tell ECQINS to have QuickPac copy files from EITHER floppy disk.
2. Specify the program to run automatically at the end of QuickPac as: `ECA R d`, where `d` is the name of the floppy drive to retrieve from, usually B or C.

For example, if QuickPac was set up to rename Drive C to A:, the command line to give ECQINS to implement Remote Retrieve is:

```
C:ECA R B<CR>
```

Remember, after renaming the drives, ECA.COM will be on floppy drive C:.

The next time you load CP/M+ with that disk QuickPac will automatically run ECA and retrieve whatever Archive Set you choose to load in drive B:.

If you use the same group of programs and data files over and over, you will find it beneficial to create an Archive Set of these files and quickly load them onto your Drive C using the QuickPac Remote Retrieve feature.

## 6. Appendices (final draft)

### CONTENTS

- 6-1 Using Drive C with Executive System Utilities
- 6-2 Executive Drive C hardware specifications
- 6-3 Executive Drive C software specifications
- 6-4 Disk space usage with Drive C
- 6-5 Centronics parallel printer cable specifications
- 6-6 Patching WordStar for improved printing
- 6-7 Modifying QuickPac data files

### 6-1 USING Drive C WITH EXECUTIVE SYSTEM UTILITIES

There are four programs supplied with your Executive which were written specifically for your Executive and which assume that your computer has just two floppy disk drives.

You must follow a few special rules when using these programs.

#### COPY

COPY assumes that you have just two floppy drives named A: and B:.

To use COPY with Drive C installed you must NOT rename the drives. The floppy drives MUST be named A: and B: and the Drive C unit must be logical drive C: while you use COPY. You can use the Drive C command "ECN C" to rename the drives at any time to be properly configured for COPY.

The RULES are:

TO USE COPY, THE FLOPPY DRIVES MUST BE NAMED A: AND B:.

THE Drive C UNIT (IF INSTALLED) MUST BE NAMED C:.

COPY CANNOT BE USED TO COPY FILES ONTO THE Drive C UNIT.



## 6. Appendices (final draft)

### COPYSYS

COPYSYS works just like COPY. It MUST have the floppy disk drive named A: and B: as they were before Drive C was installed.

COPYSYS cannot get the CP/M+ system from the Drive C unit since the system can only be stored on floppy.

The RULES are:

TO USE COPYSYS, THE FLOPPY DRIVES MUST BE NAMED A: AND B:.  
THE Drive C unit (IF INSTALLED) MUST BE NAMED C:.  
COPYSYS CANNOT BE USED TO GET (OR PUT) CP/M+ ON Drive C.

### SETUP

SETUP, unlike COPY and COPYSYS, ALWAYS assumes that drive A: and drive B: are the floppy disk drives, whether or not you have installed Drive C.

Typically, the upper floppy drive is initially drive A: and the lower floppy drive is drive B:. In this case, if you "tell" SETUP to get the CP/M+ System from drive A:, it will get it from the upper floppy REGARDLESS of the names of the logical drives.

SETUP cannot get the CP/M+ system from the Drive C unit since the system can only be stored on floppy.

The RULES are:

SETUP ASSUMES THE NAMES OF THE FLOPPY DRIVES ARE NEVER  
CHANGED BY THE Drive C SOFTWARE.  
SETUP ASSUMES THE UPPER (OR BOOT) FLOPPY IS DRIVE A: AND  
THE LOWER (OR OTHER) FLOPPY IS DRIVE B:, WITH OR WITHOUT  
Drive C INSTALLED.  
SETUP CANNOT GET (OR PUT) THE CONFIGURATION ON Drive C.

## 6. Appendices (final draft)

### 6-2 EXECUTIVE Drive C HARDWARE SPECIFICATIONS

#### MECHANICAL SPECIFICATIONS

Dimensions (not including cables): 5.6in x 5.9in x 1.0in (14 cm x 15 cm x 2.5cm)

Weight: 1 lb (.45 kg)

Shipping Weight: 3 lbs. (1.4 kg)

Operating Temperature Range: +5 to + 60 degrees C (+40 to +140 degrees F)

Storage Temperature Range: -20 to +100 degrees C (-5 to +212 degrees F)

#### ELECTRICAL SPECIFICATIONS

Power Requirements: 11 to 14.5 VDC at 0.3A max. (2.5 Watts nominal, 384K unit)

Source: Draws power from the Executive EXT. VIDEO connector or from the optional Drive C BackPac backup power supply.

#### PERFORMANCE SPECIFICATIONS

Latency time: NONE (Drive C is solid state and has no moving parts)

Maximum data throughput rate: 55,000 bytes per second  
(445,000 bits per second)

Access time to random sector: approx. 40 usec. (software access time)

Time required to load 32K byte .COM file and run it: 1.0 seconds max.

## 6. Appendices (final draft)

### 6-3 EXECUTIVE Drive C SOFTWARE SPECIFICATIONS

#### CP/M+ PARAMETERS

	<u>192K UNIT</u>	<u>384K UNIT</u>	<u>TURBOPAC</u>
Useful Storage Capacity:	190 KB	380 KB	10, 20 OR 33 MB
Block Size:	1K	2K	8K (can be modified)
Number of Directory Entries:	64	128	512 per logical drive
Directory Space:	2048 bytes	4096 bytes	16384 bytes per drive
Number of Logical Sectors:	1536	3072	varies with Block size & capacity
Number of Reserved Tracks:	0		612 landing area
Number of logical sectors/track:	2		32
Bytes per sector:	128		256

#### Amount of TPA RAM used:

WITHOUT Print Buffer Installed: 768 Bytes  
WITH Print Buffer Installed: 786 Bytes  
when used with TurboPac hard disk: 1024 Bytes

#### PRINT BUFFER SPECIFICATIONS

Installation: Automatically installed with Drive C RAM-disk loader. User can select NO buffer if desired.

Buffer Modes: Two, user selectable.  
Dynamic or Fixed.

TurboPac Spool Buffer: 128K fixed capacity when used with 384K Drive C  
Not installed when used with 192K Drive C

Fixed Buffer Capacity: User selectable from 16K to 128K  
in increments of 16K.

Dynamic Buffer Capacity: Up to the maximum space available  
on the Drive C unit.

Print Buffer Speed: Input from CP/M+ via control P, limited by display speed  
Input from PIP LST: Command, about 1300 characters per second  
Output speed limited by printer.

## 6. Appendices (final draft)

### 6-4 DISK SPACE USAGE WITH Drive C

A certain amount of disk space is required on Drive C for the unit to function properly. Space is required for the disk directory and for two or three Drive C special files.

#### DISK SPACE USED

<u>Function</u>	<u>Small Drive C (192K)</u>	<u>Large Drive C (384K)</u>
Directory space	2K needed	4K needed
ECN.COM program	1K optional	2K optional
ECU.COM program	10K optional	10K optional
totals	<u>2K min. needed</u> 13K incl. options	<u>4K min. needed</u> 16K incl. options

#### NOTES:

In applications where you need every last bit of disk space you may want to erase the "optional" programs ECN.COM and ECU.COM. The functions of these programs are explained (again) below.

ECN.COM is needed only if you want to rename the drives after running ECL. The ECN.COM program file is created by ECL at the time ECL is run.

The ECU.COM program is a utility copied automatically by ECL to the Drive C unit when ECL is run. If you don't need these utility functions, or if you are not using the Print Buffer feature, you can erase this file.

## 6. Appendices (final draft)

### 6-5 CENTRONICS PARALLEL PRINTER CABLE SPECIFICATIONS:

Cables manufactured exactly as specified in the Executive User's Manual will always work fine with Drive C. Unfortunately, many cable builders include an extra signal line which is never used by the Executive computer.

This signal, called 'PE' for Paper out Error, will interfere with normal Drive C operation if connected and MUST be removed to guarantee compatibility among your Executive, Drive C unit, and printer. If present, this signal wire will be connected FROM pin 12 (PE) on the 36-pin connector at the Printer end of the cable to pin 13 (NRFD) on the 26-pin edge connector at the Drive C end.

A properly built cable will have these signal connections:

Drive C unit PRINTER/HARD DISK/8088 Connector pin numbers	Centronics Signal name	Centronics-style Printer Connector pin no.s
1	Data bit 0	2
2	Data bit 4	6
3	Data bit 1	3
4	Data bit 5	7
5	Data bit 2	4
6	Data bit 6	8
7	Data bit 3	5
8	Data bit 7	9
10	Ground	30 (see Note 1 below)
11	Output Strobe	1
15	Printer Busy	11
16	Ground	29
18	Ground	21
20	Ground	20

Note 1. There are several signal ground connections on both Drive C and Printer ends of the cable. Your cable may have one or two connections less than shown here.

In general, more ground connections are better and it doesn't really matter which Ground pin on the Centronics printer end is connected to which Ground pin on the Drive C end.

Note 2. Some Executive printer cables also have a wire connecting Centronics pin 13 (SLCT OUT) to Drive C pin 19 (SRQ). This signal is NOT used by your Executive, AND it has NO effect on Drive C. If this wire is connected in your cable, leave it connected.

Ground Connection pin numbers:

Drive C 26-pin edge connector: 12,14,16,18,20,22,23,24

Centronics 36-pin connector: 19 through 30 (some printers have even more)



## 6. Appendices (final draft)

### 6-6 PATCHING WORDSTAR FOR IMPROVED PRINTING:

Version 3.3x for the Osborne Executive has NOT been set up by MicroPro Int'l or OCC for efficient print while editing. If you have edited a file while printing another file you may have noticed (especially with Centronics parallel printers) periods when your keyboard seems to be locked up or WordStar misses characters you type.

This condition is caused by the CP/M+ list output function (LST:) which will wait until the printer is ready (no matter how long) to output a character. Once WordStar outputs a character to the LST: routine CP/M+ will not return to WordStar for any other function until that character has been accepted by the printer.

The Drive C Print Buffer feature can eliminate most, but not all, of this annoying WordStar problem. To eliminate this problem entirely, a modification to WS.COM is required. We have listed a patch below which you can install in WordStar yourself to implement the List Status function.

WordStar has a built-in ability to use the CP/M+ function called List Status, but this function has not been installed in the standard OCC versions of WordStar. When using the List Status function, WordStar can check the printer to see if it's ready before actually sending out a character to be printed. This function virtually eliminates the annoying WordStar hang-ups when simultaneously editing and printing.

Please do NOT attempt to install this patch unless you are thoroughly familiar with the utility and the SAVE command.

It is ALSO POSSIBLE to implement this patch with WINSTALL.COM's own patching feature, i.e. via the '+' response to the main WINSTALL menu. You would patch HAVBSY and MORPAT areas. For more information, see the FOGHORN, July 1984 issue, page 60.

This procedure assumes you have SID.COM, SAVE.COM and WS.COM on the same drive. You must patch WS.COM AFTER you have run the WINSTALL program supplied with your version of WordStar. Otherwise the installation programs may erase these patches. Similarly, each time you re-install WordStar you may have to re-do these patches.

1. Give the command `SID<CR>` to load SID into memory.
2. Give the command `-RWS.COM<CR>`
3. List address 0718(hex): `-L0718,071C<CR>`  
If the List Status patch has NOT been made yet you should see:

```
0718 NOP
0719 NOP
071A ORA A
071B RET
071C MOV E,A
```

If the patch has ALREADY been installed you should see:

```
0718 RST 07
0719 JMP 02CB (or some other address)
071C MOV E,A
```

## 6. Appendices (final draft)

4. Check the WordStar user patch areas to see if they are available:

-D02CB<CR> if the 25 bytes after address 02CB are all 00 it's OK to put the patches at this standard address. If not, any area between 02CB and 035B will do if available.

5. Use the in-line assembler of SID to install the patch as follows:

```
Version 3.3.1-A0718<CR>
0718 RST 07<CR>
0719 JMP 02CB<CR>
071C<CR>
-A02CB<CR>
02CB LXI D,02DB<CR>
02CE MVI C,32<CR>
02D0 CALL 0005<CR>
02D3 INR A<CR>
02D4 JZ 02D9<CR>
02D7 STC<CR>
02D8 RET<CR>
02D9 ORA A<CR>
02DA RET<CR>
02DB RRC<CR>
02DC <CR>
```

6. Now check the code you have entered using the L0718 and L02E0 commands to make sure the result is exactly as shown above.

7. Give this command to save the modified file back to disk:

```
33-WWS.COM<CR>
```

8. Exit ASID using ^C.

9. You're done! Go ahead and use your newly patched WordStar. If it works fine be sure to save it on floppy.

## 6. Appendices (final draft)

### 6-7 MODIFYING QUICKPAC DATA FILES

This section is recommended for users who already know how to use SUBMIT. It is NOT intended as a tutorial on SUBMIT. The Drive C QuickPac program set consists of:

1. EXECST.COM Drive C's own version, not to be confused with OCC versions, created automatically by ECQINS, contains the ECL line and forces the "SUBMIT ECQ" command line on startup.
2. ECQ.COM A program to implement several special Drive C functions.
3. ECQ.SUB The data file used by SUBMIT.COM.
4. ECQINS.COM A menu-driven program to make setting up QuickPac options easy.

This section discusses how ECQ.COM works and how to modify the ECQ.SUB file in case you want to add extra operations to the usual QuickPac startup procedure.

EXECST is called automatically by CP/M+ just after you boot-up. It works similarly to the usual OCC EXECST except that our version can only execute ECL and SUBMIT ECQ.

A typical ECQ.SUB file (in this case, the one provided on your original Executive Software Disk) looks like this, explanations for each line are on the right:

ECQ T + 1	Transfer files if not already transferred,
PIP C:=A:*. *[WVOR]	using PIP to move from drive A: to drive C:
ECQ N A + A:XDIR	Rename Drive C to drive A:, then run XDIR on new A:

If you want to add command lines to this file you can edit it using the Non-Document mode of WordStar. You can add just about any command lines you choose BEFORE the "ECQ T + n" line, e.g. you might run a user group program.

Generally, if you want to run a program which modifies the CP/M+ system in some way, you should run these programs BEFORE ECL. This can be very difficult with QuickPac since our EXECST program immediately runs ECL. Generic programs which do not affect the Drive C unit should be added AFTER the "ECQ T + n" line.

Do NOT add any command lines after the last line containing a ECQ statement. Any such lines will be ignored, or, in some cases, may cause improper ECQ operation.

The rules for ECQ command syntax are simple:

1. ECQ T + n means: "If there is a file on the Drive C unit named ECLOADED.SYS, then skip n lines in this file to the next command line. If no such file exists execute the next line, and create the ECLOADED.SYS file on the Drive C unit."

This operation prevents QuickPac from copying all your files over from floppy to Drive C if you have already done so but are forced to reload and reboot CP/M+.

Note: T stands for Transfer.



## 6. Appendices (final draft)

2. **ECQ N d + A:XDIR** "Rename the Drive C unit to logical drive d: ( d MUST be the letters A, B or C). Next display a message and beep the Executive's beeper. Then run a program called A:XDIR."

Note: N stands for re-Name.

3. **ECQ N d +** "Rename the Drive C unit to drive d:. Then display a message and beep the Executive's beeper. QuickPac exits to CP/M+ without running another program."

### GENERAL RULES TO FOLLOW:

To add command line(s) BEFORE the first line (the one with ECL in it):

1. You can add any number of lines before the ECL line as long as the commands specified are the type which will return to CP/M+ immediately after execution.

2. Do NOT specify commands before the ECL command line which attempt to access the Drive C unit since Drive C is not installed until ECL runs.

To add a command to be executed only if QuickPac is running the first time, i.e. if DCLOADED.SYS is NOT already on the Drive C unit:

1. Add your command line(s) in between the "ECQ T + n" line and the "ECQ N" line, either before OR after the PIP line.

2. Change the number n to reflect the number of commands lines you added. If you added just one line, change n from 1 to 2. If you added two lines, change n from 1 to 3.

To change the program to run at the end of QuickPac:

1. Use ECQINS.COM to change this option.

To change the disks to be copied to the Drive C unit:

1. Use ECQINS.COM to change this option.

To install the Print Buffer at load time:

1. Use ECQINS.COM to change this option.

### LOGGED-IN DRIVE:

Normally, if you run ECL manually, you remain logged-on to the same physical drive you ran ECL on. Since ECL can only be run from your initial floppy drive A:, you will still be logged-on to that floppy after running ECL.

If QuickPac runs a program, ECQ always logs onto the drive the program is on.

If QuickPac does not run a program but transfers files, ECQ logs onto the Drive C unit, regardless of its logical drive name.

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## Drive C COMMAND SUMMARY

Command	Explanation
<b>ECA.COM</b>	<b>Drive C Archive/Retrieve program</b>
COMMAND: ECA mode drive<CR>	
mode =	ARCHIVE or RETRIEVE if no function is specified then ECA displays a command menu. ARCHIVE will enter Archive mode, to store files from Drive C unit onto floppy disk.
drive =	floppy drive to use for automatic Retrieve, only valid if Retrieve mode is selected. drive specified must be correct after renaming.
Examples: ECA<CR>	will display complete command menu.
ECA A<CR>	starts ECA program in Archive mode.
ECA R B<CR>	Retrieves files onto Drive C from Archive Set diskettes in floppy drive B:.
<b>ECL.COM</b>	<b>Drive C loader program, installs Drive C in CP/M+</b>
COMMAND: ECL drive buffer<CR>	
drive =	optional new logical drive name for Drive C unit, must be A, B or C. if NO drive is specified, Drive C is named C:
buffer =	optional Print buffer type: P = Dynamic Print Buffer number = size of Fixed Print Buffer, must be 16, 32, 48, 64, 80, 96, 112, 128
Examples: ECL A 32	renames upper floppy drive to C: and Drive C unit to A: with 32K Fixed Print Buffer
ECL P	Drive C is named C: with Dynamic Print Buffer
<b>ECQINS.COM</b>	<b>QuickPac Installation program</b>
COMMAND: ECQINS<CR>	starts program with menu of QuickPac options to be used after power up or RESET. options = Copying zero, one or two floppy disks onto Drive C unit. Renaming the Drive C unit to drive A: or B: Installing Fixed or Dynamic Print Buffers. Running a program on any drive.

# Drive C COMMAND SUMMARY

ECU.COM Drive C Utility program, controls Print Buffer functions

COMMAND: ECU letter<CR>

letter = single letter command abbreviation:

If no letter is specified, ECU displays menu

D file DELETE, to erase one file at a time to make more space for Print Buffer.

E ERASE ALL files on Drive C, even if Read-Only, does NOT affect Print Buffer contents.

I INSTALL (or de-Install) print buffer after running ECL. If original ECL command did specify Fixed Buffer, ECU I will install the Dynamic Buffer.

R Restart the Print Buffer after a Wait command.

S display maximum SPACE available for Print Buffer use: if using Fixed Print Buffer, S shows Space available if Print Buffer is changed to Dynamic.

W WAIT, pause output from Print Buffer to printer until ECU R or until Print Buffer is completely filled.

Z ZAP, clear entire contents of the Print Buffer

Examples: ECU<CR>

will display menu of command choices

ECU W<CR>

pauses Print Buffer output, gives message.